

# THE AUTOMOBILE

VOL. XV.

NEW YORK—THURSDAY, NOVEMBER 1, 1906—CHICAGO

No. 18

## THROUGH THE BERKSHIRES AND CATSKILLS

By PATHFINDER.

"WHERE shall we go?"—the usual question of the autoist who has a few days for touring at his disposal—presented itself to our party when we found, a fortnight ago, that we could leave business for three or four days and go out and enjoy the beautiful autumnal scenery. So successful do I consider we were in our solution of the "where-to-go" problem, that I would like to recommend the 350-mile route which we covered to all tourists, confident in the belief that no other route of similar mileage, starting and ending at New York City, will be found quite as attractive.

With the knowledge that October is the month when the mountains are at their best, we quickly settled on the Berk-

shires as our goal. We resolved to lay our course toward Pittsfield, following the route which was covered in the opposite direction by the A. A. A. tourists in 1905. We knew that this particular route had been selected by Augustus Post, and we felt that we could not improve on the work of this experienced enthusiast, whose touring has been much and varied.

So we proceeded north from New York City by the beaten touring route along the eastern bank of the Hudson, through Yonkers, Dobb's Ferry, Tarrytown, and Ossining, to Peekskill. On coming into Dobb's Ferry we were much amused by seeing a speed limit sign which had been altered by some wag to read "40 miles per hour." Despite this inducement



THE KEEN AIR AND THE RADIANT FOLIAGE MAKE THE FALL AN IDEAL TIME FOR TOURING.



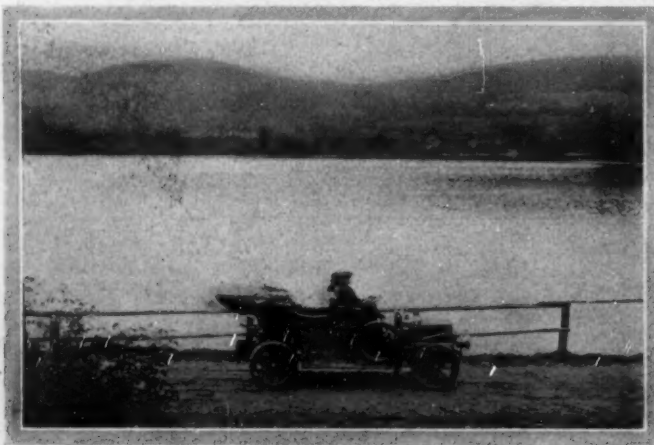
A LANDMARK BETWEEN PEEKSKILL AND COLD SPRING.

to open up the throttle, we kept along at a steady touring gait, for that style of traveling where "telegraph poles look like a picket fence" does not appeal to those whose conception of touring is to see the country.

One thing which we noticed in all the Hudson river towns was the "higher education" of Young America. The day when every automobile is hailed by the urchin cry of "get-a-horse" is gone by. Nowadays, the up-to-date youngster is evidently coming to recognize the leading makes of car, for, as we glided noiselessly along, the boys would stop in their play and call out: "White steamer! White steamer!"

After Peekskill, the next town of any size is Garrison, and beyond here two routes are presented, one along the river by way of Fishkill Landing, and the other a few miles inland by way of Fishkill Village. We chose the latter, and soon found ourselves in the hills, where we caught our first good view of that wonderful tinting with which nature sprinkles the foliage at this time of the year. The coloring of the trees baffles description, just as it renders futile the efforts of the artist to do justice to it with his brush. Suffice it to say that no shade of red, or yellow, or green, or orange is missing, and the various hues are mingled in an infinite number of combinations, so that each turn in the road brought forth from us a new exclamation of appreciative wonder. If an autoist does not get out into the real country at any other time of year, he should do so at this season, at whatever sacrifice to his other interests. Two weeks ago the hillsides were probably at their best, but a trip at this time cannot fail to impress even those with the most blunted sense of the beautiful in Nature's handiwork.

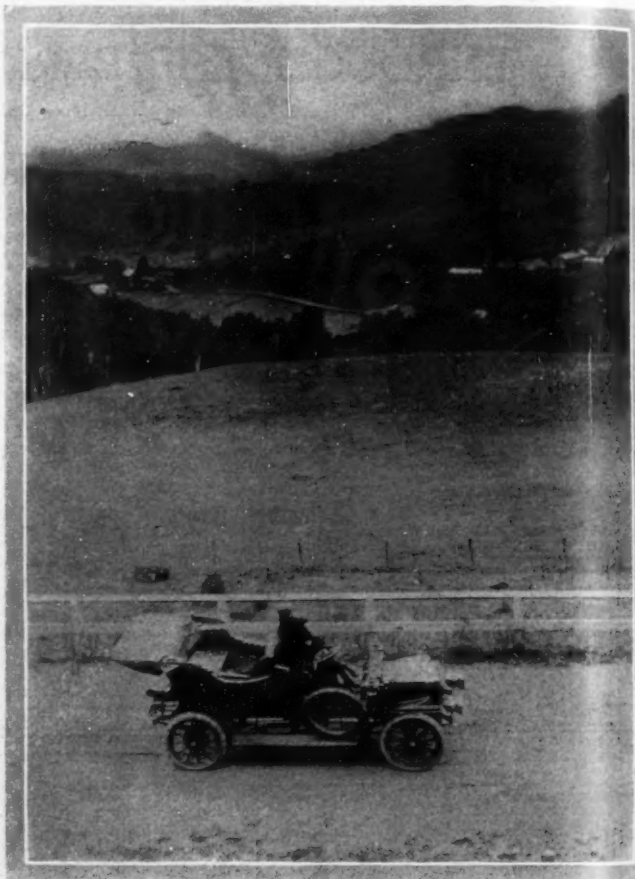
As we went along at a leisurely pace, feasting our eyes on the ever changing panorama, we were reminded of the old days of coaching parties, and we thought how few there



QUEECHY LAKE NEAR NEW YORK-MASSACHUSETTS BOUNDARY.

were who could see the country in the old days in this fashion, and how many there are to-day that can see Nature at her best, thanks to that new contrivance, the automobile.

When we reached Poughkeepsie we turned due west, and went through Washington Hollow, Millbrook, and Amenia to Sharon. Here night overtook us, and, as we were determined we would not lose a view of any of the country by traveling after dark, we stayed all night at the Sharon Inn, being very well accommodated. The next morning we went on by way of Lakeville, Salisbury and South Egremont, being now in the Berkshire Hills. Beautiful as they are at all times of year, they must be seen when the leaves are turning to be fully appreciated. Now we had a multi-hued carpet under our tires, woven of the falling leaves which every gust of wind was whirling to the ground. Great Barrington was soon reached, and then Stockbridge. The road from this town to Lenox is lined on both sides by magnificent estates, with



VIEW FROM LEBANON MOUNTAIN IS GRAND AND INSPIRING.

most imposing driveways leading to the mansions, which are often hardly visible from the road. From Lenox it is almost a steady coast down into the town of Pittsfield, famous, among other things, for being the scene of the activities of the Aero Club of America.

The tourist who has a few extra days at his disposal may make his headquarters at the Wendell Hotel at Pittsfield, the Aspinwall at Lenox, or the Red Lion Inn at Stockbridge, and spend his time most profitably in touring around the Berkshires. Throughout all this region the roads are excellent. In fact, the roads all the way from New York to Pittsfield are sufficiently good at least so that one can simply keep going with his attention centered on what is around him and with little thought of what is under him.

We reached Pittsfield with little idea of how we would return, other than that it would be by a different route from that by which we had come. The usual route followed by





CROSSING THE HUDSON AT HUDSON.



IN THE FOOTHILLS OF THE CATSKILLS.

tourists returning from the Berkshires is by way of Springfield and Hartford, or a shorter route by way of Winsted and Waterbury. Neither of these appealed to us. Our platform had been formulated in these words: "The hills for ours," and, after a conference at Pittsfield and much studying of maps, we determined to cut over to the Hudson river by the shortest route, and then go south through the foothills of the Catskill Mountains and the Ramapo Hills. Although little could be learned of this route, the event proved our selection to be a most fortunate one.

Leaving Pittsfield, we headed almost due west, and, after passing through the quaint Shaker Village, we took the fine state road up Lebanon Mountain, from the summit of which we had a magnificent view of much of the Berkshire region. In fact, we learned that for years all travelers who come to the Berkshires have been directed to Lebanon Mountain as the place from which to get the best view of the surrounding country. Half way down the mountain we passed the monument marking the boundary between Massachusetts and New York. At the foot of the long descent is the village of New Lebanon, and from here we circled around Queechy Lake, and passed through the old towns of Canaan Four Corners, East Chatham, New Concord, and Chatham. Here we struck a fine state road which led us by way of Mellenville to Hudson, forty-five miles from Pittsfield, and down grade most of the way. The Worth House, at Hudson, an old but reasonably comfortable establishment, is probably as good a hotel as will be found between Pittsfield and Kingston.

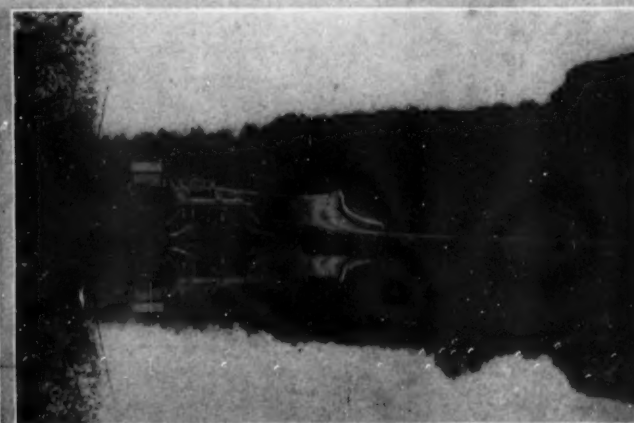
From Hudson we took the ferryboat across the Hudson river to Athens. We were charged seventy-five cents ferryage for the machine with its three passengers, and we

thought this was rather high, until it was explained to us that the same charge is made for a wagon and team of horses. From Athens, we took the "river road" through Catskill and Cementon to Saugerties. On this stretch we got a fine view of the Hudson and the hills rising to the eastward. At Saugerties we learned that there is a state road leading from there to the foot of Mt. Kaaterskill, and, as our object was to see all that there was to be seen, we followed this road, with its sharp turns and gradual ascent, for a distance of eleven miles to Woodstock. Here we left the state road, changed our direction and steered approximately south. At the little town of West Hurley we turned back toward the Hudson onto the historic Ulster Stone Pike, the main artery from Kingston through the Catskill Mountains, and one of the oldest highways in this part of the state. The old pike, while offering very rough going, is well worth seeing. Two rows of flagstones, about two feet wide, are laid at such a distance apart as to accommodate the wheels of a wagon, and the traffic of over a century has worn ruts in these stones, in some places, six inches deep. Another feature which lent interest to this part of the route was that it was over this old pike that there traveled in 1903 the contestants in the New York-Pittsburg Endurance Run, that classic event which will not soon be forgotten by the public, and never by those who took part in it.

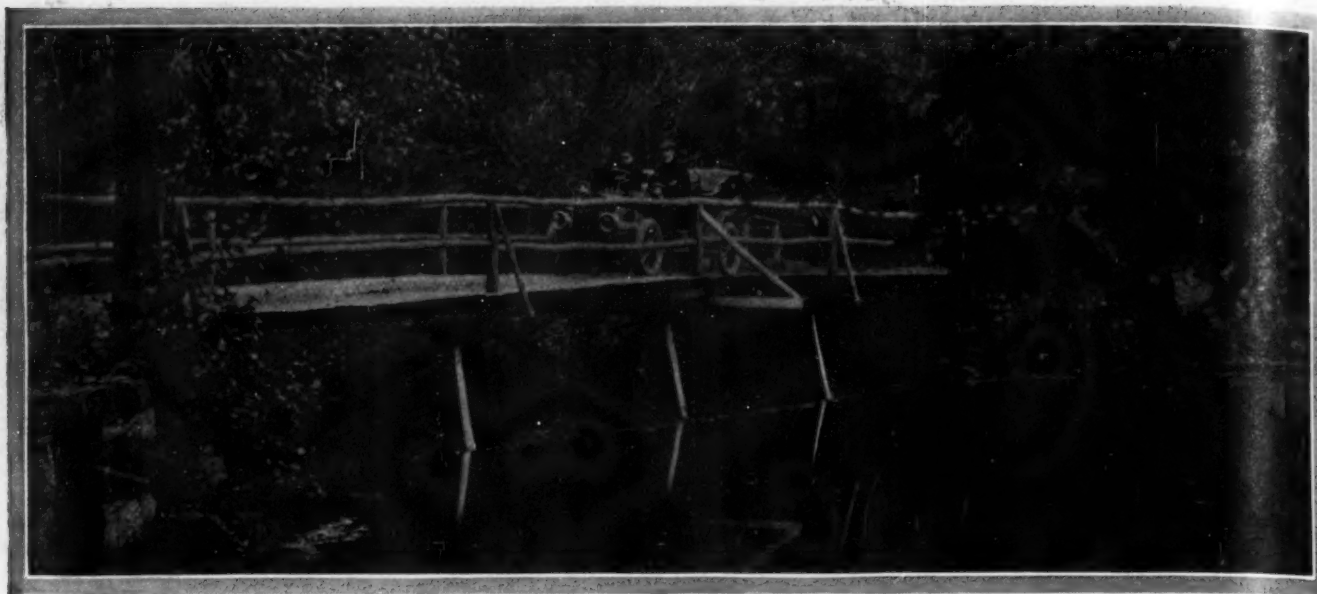
From West Hurley it was but a six-mile ride to Kingston, eighty miles from Pittsfield. It should be said, for the benefit of those who would not care for this detour by way of Woodstock and West Hurley, that there is a direct river road to Kingston from Saugerties. Leaving Kingston, we skirted the north bank of Rondout Creek, passed the numerous canal-



ALONG THE OLD ULSTER STONE PIKE



ALONG THE PLACID DELAWARE AND HUDSON CANAL.



E. H. HARRIMAN'S PRIVATE ROAD, NEAR TUXEDO, IS FREELY OPEN TO AUTOMOBILISTS.

boat building establishments to Eddyville, where we found a bridge, over which we crossed to the south bank. Here, again, a choice of roads was offered us, and we decided on the inland road as being the more picturesque. So we continued by way of Rifton, New Paltz, Modena, and Platterkill, coming back to the Hudson again at Newburg. This road proved to be very rough in places, but it led us through an interesting rural region. It seems a safe observation that along the "river road" things look modern, while on the "back road" they remind of the days of our grandfathers.

The Palatine Hotel, Newburg, is a thoroughly modern hostelry, and I will also say a good word for another hotel fifteen miles further along. The road which we traversed going from Newburg right through to Hackensack, N. J., is that which was covered in the opposite direction by the Pittsburg Endurance Run drivers. This route leads out of Newburg by way of Vail's Gate, Orr's Mills and Woodbury, to Highland Mills, 139 miles from Pittsfield. Here we were directed to the Lake View Hotel, about a mile off the main route, a small, home-like place, where we spent the night most comfortably—and no wonder, for Mine Host Brunner hails from Switzerland.

The next morning we regained the main highway and continued south to Central Valley. Beyond this town we took "E. H. Harriman's private road" and detoured several miles over the fine roads of this vast and beautiful estate, coming back on the state road again at Southfield. Then, keeping close to the Erie Railroad, we passed Tuxedo Park, then continued through Ramapo and Suffern into the state of New Jersey, finally reaching Hackensack, which, it occurred to us, is a much-maligned town. Here we turned due east to the Fort Lee ferry, and soon were landed at our homes, feeling much the better in body and in spirit after our most enjoyable tour, which had carried us into four states and through regions where Nature had done her best handiwork.

Let me, in conclusion, mention one other feature of our tour. All over New York state, on the east bank of the Hudson, in the Catskills and in the Ramapo hills, we saw an immense amount of work being done in the construction of fine, wide, macadam state highways. I was reminded of the declaration which I heard F. R. Lyons, State Highway Commissioner, make last spring: "In five years it will be possible for the motorist to drive from any important point in this state to any other over a state highway."



ATTRACTIVE ENTRANCE TO TUXEDO



GOOD ROADS AND STONE FENCES.



OCCASIONALLY THE RAILROAD.



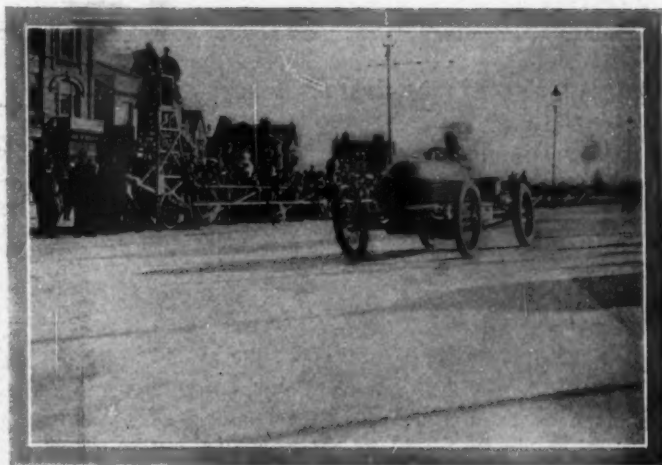
## ENGLAND'S MEET AT BLACKPOOL.

By JOSEPH A. MACKLE.

**B**LACKPOOL, England; Oct. 15.—In view of the great performances expected from some of the racing cars here this last week end, it is disappointing to chronicle but three records.

Under a lovely sky Friday's events opened at midday. The touring car events had a price classification, the \$1,500 section being won by a 14-horsepower Vulcan car, which beat eight other cars by speeding at 37 miles an hour. Twenty-seven cars turned out for the \$2,250 and under class, and some exciting finishes were witnessed. A 16-horsepower Clement-Talbot came in first at 42 miles an hour, and but four-fifths of a second separated the first and third cars. A similarly close finish provided sport in the \$3,250 section, for but one-fifth of a second separated the 30-horsepower Darracqs driven by Warwick Wright and Lee Guinness, both of whom were extremely fortunate in the racing events next day. The Darracq firm gained further laurels by the victory of the 40-horsepower Darracq of A. Rawlinson in the \$4,500 class, the speed being 57 1-2 miles an hour. The next seven places fell to Daimlers. The same Darracq won the free-for-all class in exactly the same time, 1:02 1-5, a 100-horsepower touring Mercedes being unable to better 1:08 4-5 for second place.

By this time the rain had commenced to pour, but before finally abandoning the racing the standing mile for motor omnibuses was run off. Five of the seven were of the standard type with 30-40-



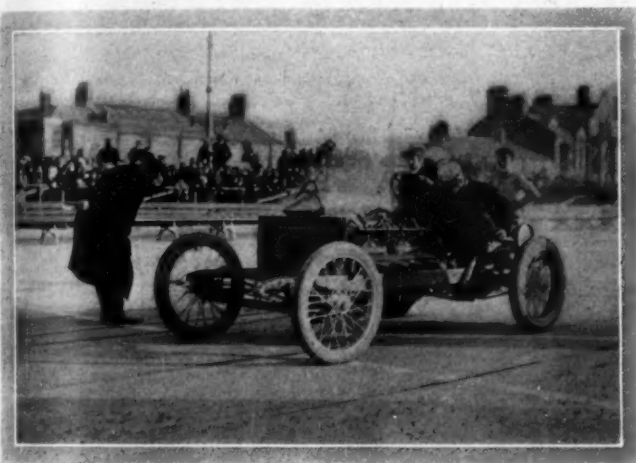
MISS LEAVITT DRIVING THE SIX-CYLINDER NAPIER.

Edge's Napier was on its mettle and tied with the 200-horsepower Darracq in 33 3-5 seconds, necessitating a further trial. This time the eight-cylinder improved its time to 32 3-5 seconds.

Just as at the Blackpool meet of last year, Daimlers were successful in the majority of the events, so this time the appellation of "Darracq Meet" was given to the gathering. This reputation was maintained by the victory of Rawlinson's 40-horsepower Darracq in the \$4,500 and under class, covering the kilometer from a flying start in 33 seconds. Daimlers scored by capturing the next eight places. The same Darracq captured the free-for-all contest, finishing the kilometer in 32 4-5 seconds.

The event for steam cars did not fill; so the motor omnibuses rattled down the course, with their human freight wild with excitement. The steam-propelled Darracq-Serpollet proved an easy winner, with the 40-horsepower Fiat 9 seconds behind. Though darkness was fast approaching, there still remained half a dozen events, which were rushed along with all speed. Huntley Walker—the organizer of the meet—easily won the standing mile for racing cars under 650 kilometers.

The three remaining racing car events were rolled into one, and in the gloom the cars roared along, the exhaust flashes presenting an awe-inspiring appearance. The announced results showed that Warwick Wright's 100-horsepower Darracq had won the four-cylinder standing mile event with a speed of 70.3 miles an hour, closely followed by his business partner, Huntley Walker, on a similar Darracq. Guinness drove the 200-horsepower Darracq down in 45 3-5 seconds (78.9 miles an hour), winning the standing mile free-for-all, and finally a handicap mile for all classes of racing cars was won by a stripped Argyll car—which finished second in the Tourist Trophy race—in an actual time of 1m. 23-5s. During the last run of the day Huntley Walker set up a new world's record for the standing mile—54 3-5 seconds.



GUINNESS, THE DARRACQ AMATEUR, READY TO START

horsepower gasoline engine, and the remaining couple were new arrivals in the Darracq-Serpollet new steam omnibuses. One of the latter was an easy winner.

Daylight on Saturday showed the track to be dry, but the hopes thus aroused of a real sporting day were rudely shattered by a downpour of rain, which lasted till almost midday.

In the flying kilometer race for cars costing under \$1,500 the 14-horsepower Vulcan again proved successful, followed close by two Humbers. Warwick Wright piloted his skeleton 100-horsepower Darracq past the line first in 26 seconds, while Demogeot—"the Speed King"—had to be content with second place.

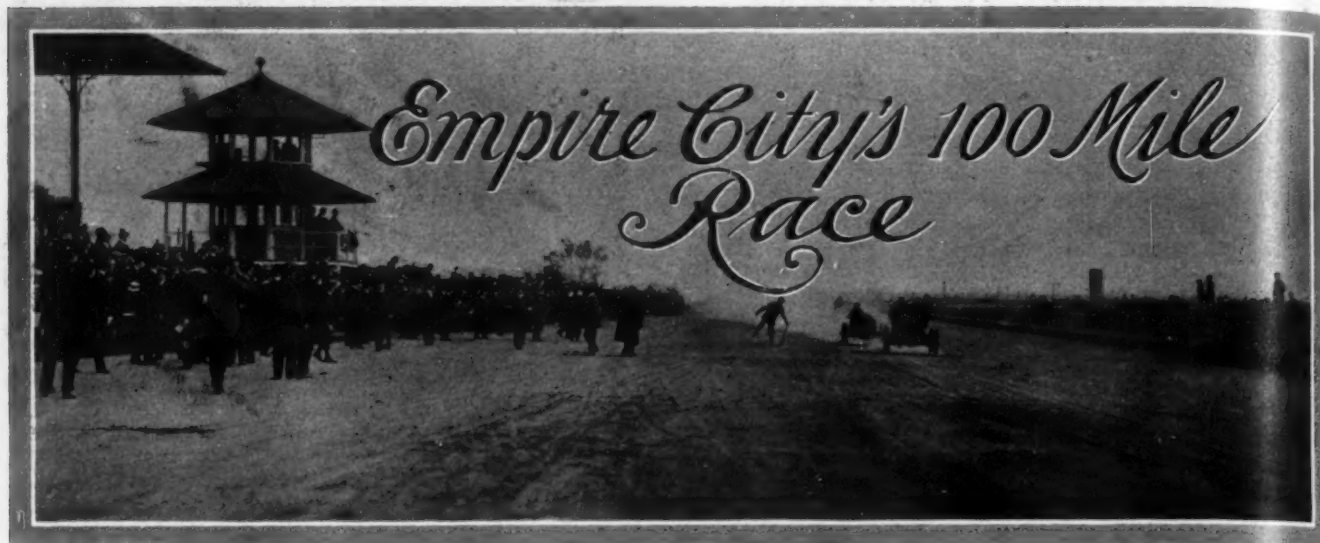
Demogeot and Hutton again turned out for the open flying kilometer, accompanied by Cecil Edge on the six-cylinder Napier and Guinness on the Florida two-mile-a-minute Darracq. Though the 200-horsepower monster was in good form, the wind prevented Guinness from finishing quicker than 21 seconds (106.5 miles an hour), a new British record, however.

The crowd became excited when Miss Dorothy Levitt steered the six-cylinder Napier past the grandstand in 24 3-5 seconds.

To keep up the interest aroused by the racing events, Friday's postponed runs over the standing kilometer were dealt with. Warwick Wright well showed his newly-acquired skill by again winning the four-cylinder class, with a time of 35 seconds (63.9 miles an hour), followed by Hutton's Mercedes in 38 4-5. Demogeot and Gabriel completed the quartette. In the open class



GENERAL VIEW OF THE BLACKPOOL COURSE.

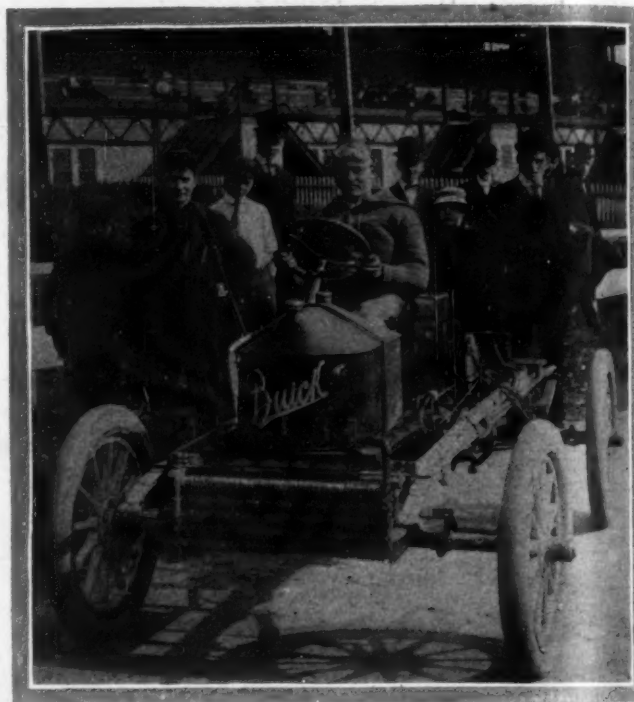


AS AT THE VANDERBILT RACE, MANY SPECTATORS INSISTED UPON GETTING OUT ON THE TRACK SO THEY COULD SEE BETTER.

ONE hundred miles around a dusty track is a severe strain for tires, and 'tis almost too much to expect heavyweight cars to travel the distance without several changes of shoes. It was this necessity that made the century race at the Empire City track, Yonkers, last Saturday, an event wherein luck was likely to figure more or less in the winning. But it must be said that Koehler and his Buick supplied a consistent performance that called for much credit and caused the spectators to shout noisily.

Eight cars lined up for the race: Mateson, Cooper; Oldsmobile, Keeler; Mercedes, Bernin; Peerless, Wridgway; Packard, Embleton; Cadillac, Burne; Cadillac, Roberts; Buick, Koehler.

For seventeen miles, with the exception of one circuit, when he gave way to Keeler and his Oldsmobile, Tom Cooper led the procession with his powerful Matheson. It was lively going, but Cooper seemed to have a little extra speed up his sleeve whenever he called for it, and his extended track experience caused him to take the turns without much hesitation. On the eighteenth mile, swinging into the homestretch, the Matheson made an unusually wide turn and loosened a rear wheel, which came off half way down the straight. Cooper was equal to the emergency, kept his seat, and brought the quivering monster to an abrupt stop—so abrupt that Irving, the mechanic, was thrown some distance, and later discovered that he had a broken collarbone. Some clever steering by those in the rear averted a catastrophe, and the stalled machine was quickly gotten off the track by those curious spectators who had crowded on the course in order to get a closer watch on the lively and interesting proceedings.

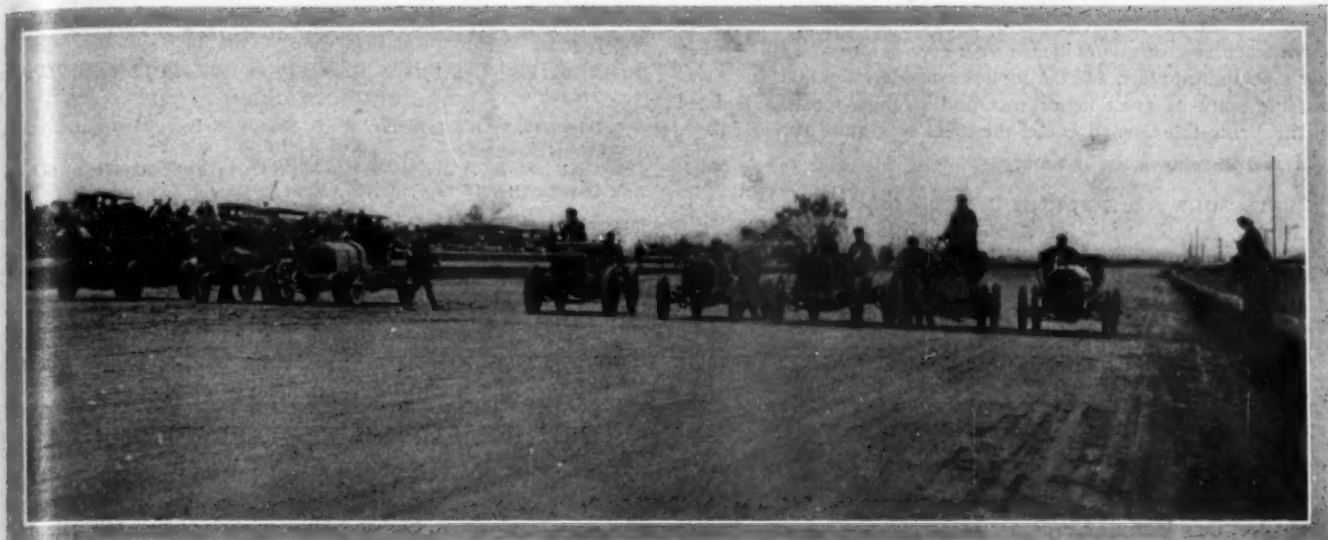


OPERATOR KOEHLER OF THE BUICK NATURALLY SMILED.

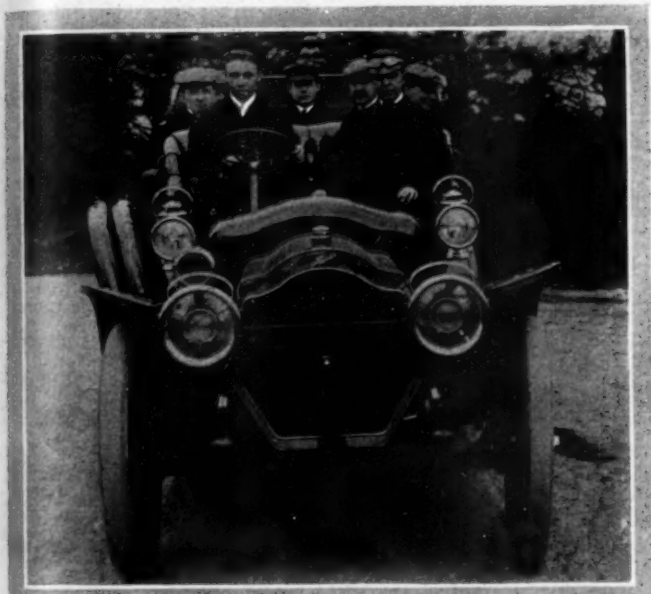


TOM COOPER, DRIVING MATHESON, TENACIOUSLY RETAINED THE LEAD UNTIL HE HAD THE ACCIDENT IN THE SEVENTEENTH MILE.





EIGHT CARS STARTED IN THE 100-MILE RACE, THE EVENT OF THE DAY, DESPITE THE PREVALENCE OF PUNCTURES.



ROBERTS AND H. S. HOUPPT IN THOMAS WINNER OF TWO EVENTS.

With the Matheson out of the reckoning, the Oldsmobile went to the front, where it remained until the completion of the fifty-eighth round, when tire troubles compelled a stop and a loss of the twelve minutes' lead over the Buick, which remained the leader for only five miles, when the Oldsmobile again assumed the advantage. Keeler was confident of winning, but another puncture in the ninetieth mile caused a loss of eight minutes. Keeler had Koehler in sight on the last mile, but failed to overhaul him by the close margin of 15 2-5 seconds. W. Gould Brokaw's Mercedes, driven by Bernin, had had tire difficulties, and its distance was 92 miles when Referee Morrell called off the race. The Packard and one of the Cadillacs were still encircling the course. The 100-mile record of Jap Clemens, driving a National at Indianapolis a year ago, was untouched, the Indiana figures being 1:53:21 4-5; Koehler's time was 2:05:31 3-5, and Keeler's figures 2:05:47. Another mile would have told another story.

Montagu Roberts piloted the 1907 Thomas to victory in the five-mile race for stock cars and also appropriated the handicap from scratch. Cedrino and the Fiat, Jr., excelled in the foreign car class, and against the watch the Italian machine cut three middleweight track records. Keeler and his Oldsmobile took the five-mile event for American cars, and Koehler and his Buick scored in the stock car contest for machines of \$1,500 or less. An unusually large number of the several thousand spectators



MORE CARS WERE PARKED ON THE LAWN IN FRONT OF THE GRANDSTAND THAN WERE EVER SEEN BEFORE AT A TRACK MEET.

journeyed to the Yonkers course in automobiles, and probably more machines were in evidence than ever before at a track meet. For a postponed meet, and taking into consideration that there was no star event of great importance and strong opposition existed in the Princeton-Cornell game, the meet was quite successful.

Herewith follows the summary:

#### 100-MILE RACE FOR STRIPPED TOURING CARS.

1. Buick, 22 h.p.; driver, H. J. Koehler; 2:05:00 3-5.
2. Oldsmobile, 40 h.p.; driver, Ernest Keeler; 2:06:47.
3. Mercedes, 60 h.p.; owner, W. G. Brokaw; driver, M. Bernin.

#### FIVE-MILE INTERNATIONAL RACE.

1. Fiat, Jr., 24 h.p.; driver, E. Cedrino; 4:57.
2. Renault, 60 h.p.; owner, W. G. Brokaw; driver, M. Bernin; 5:11 4-5.
3. Packard, 30 h.p.; driver, C. J. Embleton; 5:29 4-5.
4. Oldsmobile, 40 h.p.; driver, Ernest Keeler; 5:32.

#### FIVE MILES—STOCK CARS SELLING FOR \$3,500 TO \$5,000.

1. Thomas, 60 h.p.; owner, H. S. Houpt; driver, Montagu Roberts; 5:49 4-5.
2. Peerless, 45 h.p.; driver, C. G. Wridgway; 5:51 4-5.

#### FIVE MILES—AMERICAN CARS.

1. Oldsmobile, 40 h.p.; driver, Ernest Keeler; 5:36 3-5.
2. Peerless, 45 h.p.; driver, C. G. Wridgway; 6:18.

#### FIVE MILES—FOREIGN CARS.

1. Fiat, Jr., 24 h.p.; driver, E. Cedrino; 4:56 4-5.

2. Renault, 60 h.p.; owner, W. G. Brokaw; driver, M. Bernin; 5:05 3-5.

#### FIVE MILES—DEALERS' HANDICAP FOR FULLY-EQUIPPED TOURING CARS.

1. Thomas, 60 h.p.; owner, H. S. Houpt; driver, Montagu Roberts (scratch); 6:20 4-5.
2. Glide, 36 h.p.; driver, J. C. McCafferty (10 seconds); 7:18.
3. Oldsmobile, 28 h.p.; driver, Ernest Keeler (20 seconds).

#### THREE MILES—STOCK CARS SELLING FOR \$1,500 OR LESS.

1. Buick, 22 h.p.; driver, H. J. Koehler; 4:17 1-5.
2. Oldsmobile, 8 h.p.; driver, L. C. Hutcheson; 4:30.
3. Jackson, 24 h.p.; driver, H. B. Hutcheson.

#### MIDDLEWEIGHT TIME TRIALS.

Cedrino, 24-h.p. Fiat, Jr.: First mile, 0:56 2-5; second, 1:52 4-5; third, 2:49.

### ANOTHER EMPIRE MEET ELECTION DAY.

The success of last Saturday's races at the Empire City track, Yonkers, has brought about the announcement of another meet at the same place on Election Day, when another 100-mile race will be held. Now realizing the importance of tires, the participants in the century race will prepare accordingly. Cooper and his Matheson will start again, Keeler and the Oldsmobile will participate, and Guy Vaughan with the Stearns is scheduled. Entry blanks and further information can be obtained from Secretary F. J. MacKain, Broadway and Seventieth street, New York.

## THE PROGRAM FOR THE FLORIDA MEET

JANUARY 22 to 27 will be the dates for the 1907 meet on the Floridian stretch of beach that connects fair Ormond and picturesque Daytona. The question of later dates was carefully debated, but when all facts had been taken into consideration it was decided to hold the meet during the usual week in January. The list of events was the result of much consultation before it was finally submitted for approval to President Asa Paine of the Board of Directors of the Florida East Coast Automobile Association.

There will be eight free-for-alls, including the Dewar flying start mile and the "Speed Crown" two-miles-a-minute event; eight contests for touring cars, with one race wherein the Americans and foreigners will clash; five struggles for the amateur owners, with distances from one to five miles; and record trials of all kinds for all classes of cars.

For the 1907 meet definite events will be scheduled in advance for definite days, the machinery for conducting the races will be thoroughly prepared in advance, and the list of officials will in-

clude experienced men who are well known in automobile racing. In addition to the events already decided upon, there is a possibility that a second edition of the Vanderbilt Cup race will be supplied in the form of a 300-mile contention on the concluding day of the meet. Vanderbilt entrants will be asked to participate. If enough replies are favorable, the race will be added.

Despite the fact that a speed of 127.66 miles an hour was attained at the 1906 meet, it is expected that the high-powered craft will travel over the ocean boulevard at even greater rapidity, 130 miles and even more an hour being the prediction of the experts. An entry list is assured which will contain the most noted professional and amateur drivers of Europe and America.

Entry blanks and further information will be available from W. J. Morgan, who, as before, will have general charge of the conduct of the meet. He can be addressed at Bretton Hall, Broadway and Eighty-sixth street, New York City.

Herewith is the diversified list of events:

#### Free-for-All.

- One mile—Dewar World's Championship trophy, flying start.
- One mile—Gasoline cars only, flying start.
- Two miles—Two-miles-a-minute "Speed Crown," flying start.
- Five miles—International World's championship record race, flying start.
- Ten miles, standing start.
- Ten miles, handicap.
- Fifty kilometer record race, flying start.
- One hundred miles—Minneapolis International World's championship, standing start.

#### Touring Cars.

- One mile—American championship. "Mile-a-Minute" touring cars, to carry at least four passengers, flying start.
- Two miles—\$1,500 or less touring cars designed for four or more passengers, standing start.
- Five miles—Over \$1,500 and including \$3,000 touring cars designed for four or more passengers, standing start.
- Five miles—Touring cars over \$3,000 designed to carry four or more passengers, standing start.
- Ten miles—Handicap touring cars.
- Thirty miles—Stripped touring cars all classes.

Ten miles—Stripped touring cars listing under \$5,000.

Thirty miles—All classes, American touring car championship. First three to represent the U. S. in international touring car championship.

#### Foreign Touring Cars.

Thirty miles open—All classes. First three to compete in thirty miles international touring car championship.

#### Open Touring Car Special.

Thirty miles—International championship. Open to first three cars in American and foreign car championships.

#### Open to Amateurs Only, Owners to Drive.

- One mile—All classes of gasoline cars, standing start.
- Five miles—Touring cars of all classes, standing start.
- Five miles—All classes, standing start.
- Ten miles—All classes, standing start.
- Ten miles—Touring runabouts of 50 h.p. or less, best average of three races, standing start.

#### Record Trials.

Facilities will be provided for record trials by all classes of cars entered in the races at the following distances: One kilometer, 1 mile, 5 miles, 10 miles.



## DEVELOPMENT OF THE TWO-CYCLE GAS ENGINE\*

By C. P. MALCOLM.

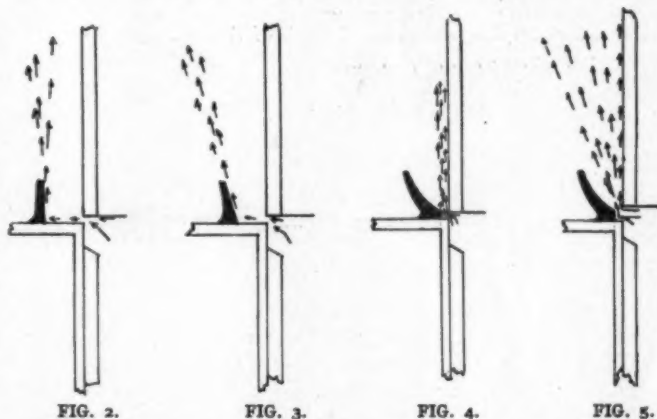
THERE is no part of a two-cylinder engine presenting difficulties in the way of arriving at an ideal solution that the deflector does. The writer has given more thought and more careful experiment to it than to any other one thing about two-cycle designing. The law of commingling of gases lying at rest adjacent to each other need not be taken into consideration. The time is altogether too short for any attractive affinities to assert themselves; the most powerful chemical affinities alone could do that, and as these are not present mechanical displacement and agitation are what we have to consider. If we could remove the cylinder head and replace it with a tube of the same bore as the cylinder, and push the charge down into the cylinder in a solid column as quickly as the charge usually enters, we would find that the line of demarcation between the exhaust gases and the fresh charge was as sharp and as clearly defined, almost, as if there was a thin sheet of metal separating them. But when we project a jet of gaseous fluid into a larger mass of gaseous fluid which is at rest, we have to take many things into consideration, and get as near as we can to the action of the solid column of the same size as the gas we are displacing. The conditions that we are confronted with in the usual form of two-cycle construction are quite favorable to such action. If we could throw a solid column of the entering charge straight up the intake side of the cylinder in close contact with its walls, then with the now usual concave cylinder head it would follow around the circle in an unbroken column and be deflected down the exhaust side toward the exhaust port. However, if this column should be in the shape of a wedge, with the thin end ahead and in close contact with the wall, so that it would push the exhaust to one side, like the bow of a boat, instead of ahead of it, it would be still better (as it is across to the opposite side of the cylinder that we are aiming to get it), and when this column of charge comes to the apex of the cylinder there will be some mixing of the currents, and we would like all of the currents to be pure charge.

## Various Forms of Deflectors in Use.

Fig. 2 shows the form of deflector in most common use and Fig. 3 shows another quite popular form. The sketches show the action when the port is just beginning to open and the crank chamber pressure is at its highest, the arrows show the direction of the jet of charge striking into the cylinder, which is full of inert exhaust gases that we are aiming to and must expel if we are to get the best results from our next explosion. Instead of this jet of fresh charge keeping in contact with the cylinder on the one side and pushing the exhaust away from it with its other side, it shoots up through the exhaust gases in a semicircle nearly half way around, and the distance of the deflector away from the cylinder, thus cutting off from the main body all of the exhaust gases that are between this semicircular jet and the intake side of the cylinder. As the port opens the jet thickens until it fills the deflector space, and all of the exhaust gases cut off by the thin jet in the first place are carried along and mixed with the widening jet, the thin part of the jet being always in advance, having the first start and the highest initial pressure to move it. If the deflector represented in Fig. 2 could stand in contact with the walls of the cylinder and as the port began to open it would move back in exact (or a little accelerate) pace with the opening of the port, so that the fresh charge would fill the space between the deflector and the cylinder walls at the very beginning of the opening of the port—the same as it does after the port is wide open—we would have it and all deflectors that we have seen on the market or in experimental

laboratories seem to be designed as though that was the real action; but the fact is, by the time the deflector is in the right position for this action to take place, at least two-thirds of the charge has already gone into the cylinder. As there is no practical way of moving the deflector, or of retaining the charge in the crank chamber until the deflector is ready to deflect it properly (and this latter course would not answer at all, even if it could be done), we must devise some form of deflector whose action will coincide as nearly as possible with one or the other of these.

After exhaustive trial and experiment the writer finds that the deflector shown in different stages of its action in Figs. 4 and 5, and the completed action in Fig. 1, gives results very near ideal. The vertical portion of the deflector is not really perpendicular, but cuts under a little, so that its straight line would strike the wall of the cylinder at about the upper end



of the piston travel, and it has a little fillet at its bottom. In a five-inch by five-inch cylinder this part of the deflector should be from 1-16 inch to 3-32 inch away from the cylinder walls and the same in depth, so that when the port has been uncovered, say 3-32 inch, there will be a jet of charge 3-32 inch thick going straight up close to and in contact with the walls nearly half way around the cylinder. The object of having it slightly undercut and the small fillet is so that with the very first infinitely small opening of the port the infinitely small jet will be deflected in, close to the walls of the cylinder, as well as the thicker jet admitted as the port opens wider. When the piston and deflector have descended so that there is another 3-32 inch of the port open, there will be one 3-32 inch of the jet still trying to go straight up and the other 3-32 inch forcing its way straight across it toward the deflector. It will not reach the deflector, but will be directed upward by the up jet, and the up jet will be deflected toward the deflector by it, and the two forces will carry the combined jet in a diagonal line toward the center of the top of the cylinder.

## How the Action of the Jet Is Influenced.

By keeping in mind these two opposing forces, we will see that until the port has opened 3-32 inch the jet is going straight up, then as the port opens further the transverse pressure is brought to bear against it, slight at first but increasing in regular ratio as the port opens and the direction of the jet is changed, just as surely and effectively as though (imagine now for a moment a square cylinder with a port across one side of it) a diaphragm of thin metal was hung on a hinge close to the top of the port, on the inside of the cylinder, and worked by mechanical means so as to throw it from the perpendicular to the angle described, in exact time with the opening of the port. Of course, the diaphragm

\* Continued from page 537, issue of October 25.

would disturb the charge that had already entered the cylinder, while deflecting the jet by the means described does not disturb it except to lift it up by adding to its volume at its base. As the port opens wider, the transverse jet becomes the predominating force and carries the entire charge over against the deflector. This design of deflector gives us as near the ideal action as we can ever expect a deflector to give; the charge enters as the thin edge of a wedge, in contact with the cylinder walls on one side and the exhaust gases on the other. As this wedge continues its upward course, its impact against the concave cylinder head keeps it in very close contact as it is deflected around it and started on its course down again. As this jet of charge constantly increases in thickness and volume, and never loses its identity as a solid column of projected gases, the similitude of a wedge expresses it quite accurately. Its entrance constantly pushes the exhaust gases toward and out of the exhaust port. The exhaust cannot mix with it except by the frictional contact on one side, and after the process is completed the boundary line between pure charge and pure exhaust will be distinct and not very thick. The contents of the cylinder will be pure charge on the inlet side and in the top end of the cylinder, pure exhaust lying around and back of the exhaust port, with a thin stratum of mixed charge and exhaust separating the two. We have not yet found means of demonstrating this with unimpeachable certainty, but our observation and experiments lead us to believe that the higher the speed of the engine, the less the fresh and exhaust gases mix with each other, and there is less volume to the boundary line between the pure charge and the pure exhaust gases.

#### Why Compression Space in Two-Cycles Should Be Less.

In two-cycles the compression space must be less than in four-cycles to get the same compression pressure, because the first part of the compression stroke is lost for compression, and is expended in discharging the contents of the cylinder lying adjacent to the exhaust port, until the port is covered by the up stroke of the piston, after which compression begins. From this action we see the fallacy of the frequent practice of giving the lead to the exhaust port by raising it up instead of widening it out; that is, in not having the bottom of the exhaust port on the same plane as the inlet and both on the same plane, as the top of the piston when it is on its bottom center because any exhaust lying on the top of the piston when it is on its bottom center cannot escape until the piston rises to a level with the bottom of the port. As the piston begins to rise the displacement is the same over the whole area of the piston, and the pure charge adjacent to the inlet port will move over toward the exhaust port and will push out the exhaust if it can, but will pass over it and go out itself if the exhaust is lodged in below the bottom of the port.

This displacement is not sufficient to cause any escape of fresh charge if the deflector works right, but if it does not, or if we supplement the pump action of the piston and get a fuller charge into the cylinder, by means which will be described later, we must not put any obstacle in the way to prevent all of the exhaust escaping before any of the fresh charge can.

#### Structural Improvements That Are Important.

This completes our description of the design improvements to date in the ordinary two-cycle, and we will now consider structural improvements which are supposed to add either to its convenience, accessibility, or its reliability. Fig. 1 is intended to show all that is best in both old and new forms of construction up to the present time. There is an opportunity for difference of opinion upon several points, and each designer will perhaps modify to suit his individual preferences or the peculiar conditions his engine is designed to fill. The pitman or connecting rod should be of steel, either cast or

drop forged, and be made thin and light, and ribbed to give it strength and stiffness, as the stresses induced by a reciprocating motion increase with the square of the speed. Care should be taken in proportioning all of the reciprocating parts of a high-speed engine, as a little additional weight in one part will throw an increased strain upon another part, and a heavy construction throughout may not be as strong and substantial as a lighter but better proportioned one would be.

The drawing represents the bottom box of the connecting rod as hinged on one side, and a screwed and riveted stud and a nut on the other, with which to take up the slack and wear. This bottom box can be made very light, for there is no strain upon it. All pressures are downward in a vertical two-cycle, and the engine would run at any reasonable speed with very loose bearings just as quiet and still as if they were a perfect fit. When running at very high speed the compression would

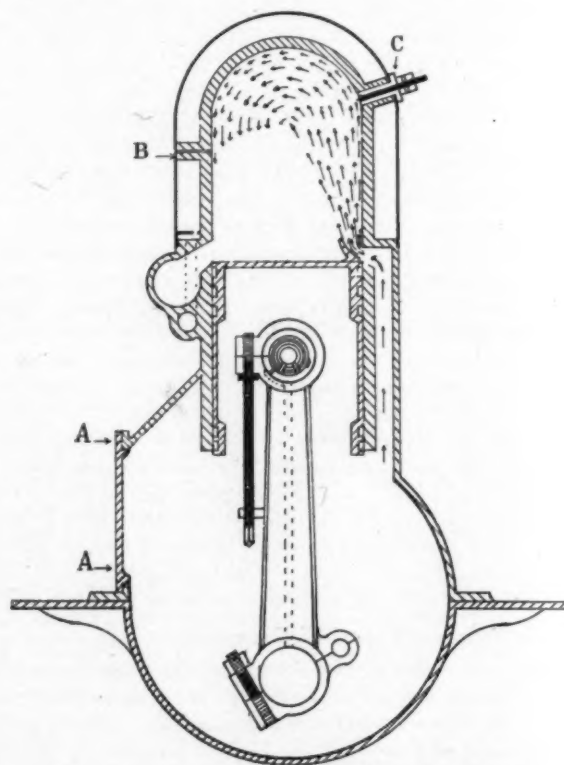


FIG. 1.—SECTIONAL VIEW OF TWO-CYCLE MOTOR.

not hold the journal and brasses in contact when passing the up center, in which case the bearing would pound a little at first when stopping the engine, or whenever it should miss an explosion.

The lower or crankbox of the connecting rod may be of babbitt, hard brass, or bronze, and in two halves. The upper end or piston pin bearing should be of brass or a bronze bushing, and may be cut through on one side only, as shown in the drawing, so that it will not turn. The split will be horizontal, so as to allow it to tighten upon the pin when taking up the wear by the threaded bolt in the top end of the connecting rod, but more especially to keep the oil holes in register with the oil grooves and the oil pipe running down to the crank. The threaded bolt should be a loose fit, for the threaded part will be thrown out of line with the smooth part as the bearing is drawn together to take up wear. The rod end can be furnished with a set screw at its support, so as to hold the screw from turning after it is set to the desired tightness. The nut for the crank-bearing adjustment should be a split key nut or any other device that will make it absolutely secure. The writer prefers the split key nut in this case because of its simplicity and safety, and



as the adjustment of the journals of a two-cycle do not require great accuracy, it is equally as good as a more elaborate device. By removing the square flat plate A A, which is ribbed all around the inside close to the engine frame to give it the requisite stiffness to hold the packing airtight between the bolts that secure it to the engine frame, all of the connecting rod adjustments are conveniently at hand and the engine is as easily accessible as any four-cycle auto engine now on the market.

#### Lubrication of the Working Parts.

To lubricate the connecting rod journals a hole is drilled lengthwise nearly through the piston wrist pin and a hole is drilled into the side of the cylinder a little below the horizontal plane of the bottom of the ports, in such position that the lengthwise hole in the piston wrist pin will register with it whenever the wrist pin passes it in going up and down. This position is directly below one of the bridges separating the exhaust from the inlet ports. This hole in the cylinder is tapped for an oil cup connection, and every time the piston wrist pin passes it, some of the oil will be scraped off into its longitudinal oil hole. The piston must be about one-fifth longer than the stroke of the engine, so that the oil hole in the cylinder is always covered by the piston, and the oil cannot escape except into the oil hole of the wrist pin. At the lengthwise center of the wrist pin two holes are drilled into it to strike into the oil hole, each at a different angle from the other, as clearly indicated in the drawing. The rocking motion of the top end of the connecting rod will bring these two oil holes into register alternately, one with the groove leading to the hole running down through the connecting rod to the crank pin bearing, and the other with an oil groove cut lengthwise in the piston wrist pin bushing. These are all indicated in the drawing and can be readily understood without further explanation.

For lubricating the cylinder the writer prefers a heavy plumbago grease. If it is desired to lubricate with grease, on the same horizontal plane as the oil hole in the cylinder which we have just described, commencing at about one inch from the oil hole, cut a groove around the inside of the cylinder to within about an inch from the other side of the oil hole; this groove in an automobile engine should be about 3-16 inch wide and 1-8 inch deep, with its bottom rounded, and can be cut with a mill. It does not matter much about the width of this groove, except that the piston rings must be wider than the groove, to avoid all danger of their catching when passing over it. The cylinder can be drilled and screw tapped so that the pipe from the grease cup will strike into this groove at any point, but preferably about midway between the circumferential center of the groove and the center of the side of the cylinder, upon which the pressure of the piston, caused by the angularity of the connecting rod, comes. If oil is to be used exclusively for cylinder lubrication, the oil groove can be cut clear around the cylinder with a lathe tool, and one oil cup placed near the wrist pin oil hole will do for both cylinder and connecting rod, but the distribution of the oil will not be so definite.

#### Some General Data as to Design.

In Fig. 1, the drawing B represents an opening for a relief cock for ease in starting the engine by hand, as no compression takes place until the relief hole is covered by the piston. A 3-16 inch hole is large enough for a five-inch bore cylinder. The spark plug is placed in the position shown in the cut at C, so that when the inlet is throttled so that only a partial charge enters, as when the engine is running light, the purest of what charge does go in will after compression be in contact with the spark plug. The water outlet is not shown, but it should be either at the top of the cylinder or between that and the spark plug. The intake side of the cylinder of a two-cycle gas engine will keep cool much easier than the exhaust side, and care should be taken to have the

coolest part of the water and the best circulation on the exhaust side. To regulate the speed of this engine, throttle between the carbureter and the intake to the crank chamber.

We use the term "ordinary two-cycle" to indicate a two-cycle engine that uses the crank end of an ordinary piston as an air pump, and the crank chamber as the air pump compression space, and the same essential parts throughout as have been in general use for years, as distinguished from the different types of two-cycle engines more recently brought out or now in course of development, such, for instance, as having the pump end of the piston enlarged so as to pump a larger volume of air and also of having a separate supply cylinder to pump the charge into one or more power cylinders. These different types we will consider in our next article. Some of these have great merit and will undoubtedly supersede the four-cycle for automobile propulsion as soon as they have demonstrated their superiority for a sufficient length of time to overcome the prejudice of the more conservative.

But by care in designing each and every part of the ordinary two-cycle, on the lines we have indicated, it will be very nearly, if not fully equal in purity of charge and general efficiency to a four-cycle, and develop twice the power, and being entirely free from jerk-motion valves or anything of that nature, it is its superior mechanically, and much more durable and substantial, providing you do not undertake to make a cheap engine. It is much less costly to build a two-cycle than a four-cycle, that cheap men generally take up the idea of two-cycle construction to make a cheap engine, and the cheap idea predominates throughout, much to the discredit of two-cycle engines as a class.

#### AUTOMOBILES FOR THE TROPICS.

O. P. Austin, chief of the Bureau of Statistics of the Department of Commerce and Labor, comments as follows on the future of the automobile, especially as it concerns its use in tropical countries:

That the horseless vehicle, of whatever type, is also to prove of enormous and constantly increasing value in the temperate zones, where horses may be used, goes without saying. Its substitution for the horse will enable man to devote to the production of food for himself that great area now required for the production of sustenance for the millions of horses performing the duties which the horseless vehicle may perform; while the improvement to public health in the great cities through increased cleanliness of streets would also be an important result. Its use in the Tropics, however, I consider of even greater importance, because it can supply there the transportation which cannot, because of climatic conditions, be supplied by the horses, which have, up to this time, proved satisfactory in the Temperate Zone.

On the question of whether anything is being done in the way of movements of the horseless vehicle towards the Tropics, I may say that Germany exported to Chile in 1904, the latest year for which I have figures, about \$38,000 worth of horseless vehicles built for freight purposes, and something over \$80,000 worth of passenger automobiles to other tropical sections. The United Kingdom sent in 1905 nearly \$100,000 worth of automobiles to the Cape of Good Hope, \$130,000 worth to Natal, \$480,000 worth to India, and over \$200,000 worth to Australia. France sent in 1904 about \$524,000 worth to Algeria, \$69,000 worth to Tunis, \$38,000 worth to French Indo-China, and to other French colonies about \$70,000 worth. Our own exports of automobiles in the fiscal year 1906 were about \$3,500,000 in value, and of this amount \$423,000 worth went to Mexico, \$241,000 worth to the West Indies and Bermuda, \$161,000 worth to British Australasia, \$96,000 worth to South America, \$88,000 worth to Asia and Oceania, and to Africa \$29,000, thus indicating that about one-fourth of our exports of this article went to tropical or sub-tropical countries; and in addition to this there were \$107,000 worth to Hawaii and \$26,000 worth to Porto Rico. During the three months of the current fiscal year for which we have figures, 33 per cent. of our exports of automobiles went to tropical and sub-tropical countries.

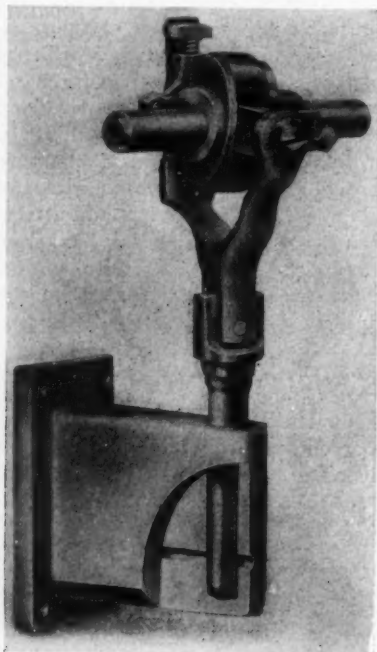
There are 2,578 licensed automobiles in Wisconsin. The state's total receipts from licenses and license transfers have been \$2,685. At an average of \$1,200 apiece, the total value of the 2,578 machines is \$3,093,600. Milwaukee has the largest number of autos of any city in the state, 749.

## THE CONSTRUCTION OF FORCE FEED LUBRICATORS

**I**N addition to providing the motor and the transmission mechanism with suitable oil ducts and other means for distributing oil to the various points where friction occurs, it is necessary to provide means for feeding to these ducts, and through them to the bearings, a continuous supply of oil. It is necessary that the possibility of a stoppage of the flow of oil should be as remote as human ingenuity can make it, for the high speed of the pistons and shafts and the intense internal heat of the gasoline motor will make trouble as soon as the proper supply of lubricant is cut off. It is usually considered necessary to arrange the oil-supplying mechanism so that the oil will be fed in proportion to the speed

of the engine without the driver of the car having to make adjustments continually. Moreover, the quantity of oil fed should not vary with the thickness of the oil, for this would cause the bearings to be given more oil in warm weather, or under other conditions tending to heat the oil, than in cold weather, when the oil would naturally be thicker; and the use of a different brand of oil would also be likely to make trouble in this respect.

The desired results are attained usually by the use of a mechanical force feed lubricator, and in most cars this takes the form of



VALVELESS OIL PUMP.

a set of small plunger pumps, each pump connected to a pipe which communicates with a bearing or cylinder or other point to be lubricated. The pumps are driven from the engine itself, so that as the engine speed varies the pump speed will also vary, the quantity of oil pumped being thus in direct proportion to the engine speed and the consequent requirements of the seats of friction. But all bearings do not require exactly the same quantity of oil, and each motor must have its oiler adjusted to exactly suit its individual needs. Therefore there must be some way of separately adjusting the flow of oil from each pump without reference to the rest of the pumps. This is usually accomplished by varying the effective stroke of the plunger, so that the quantity of oil that passes through any one pump may be varied from the full capacity of the pump at full stroke to zero, the plunger doing no effective work. Liability to stoppage of the feed pipes is reduced to a minimum by constructing the pumps to work at high pressure in case of obstruction, so that foreign substances will be forced through and out of the feed pipe. Thus, if by any chance a little wad of waste, for instance, in any way gets into the feed pipe and chokes it, the pressure behind it will rise with successive pump strokes until the accumulated energy is sufficient to overcome the friction of the obstruction against the walls of the pipe and it will be forced through. Such lubricating devices are usually supplied with one or more fine strainers, however, and with a reasonable amount of care on the part of the operator there is not a great deal of danger of obstruction. Therefore the most important advantage derived

from the positive action of the pump is the regularity of the flow of oil, this being always the same for a given speed, whether the oil is thick or thin, there being no disturbing factor as long as the effective stroke of the pump is unchanged. In the case of a closely-fitted bearing it is necessary to use some force to inject the requisite quantity of oil between the rubbing surfaces, and here again the pressure is useful. Of course, leaky plungers or worn or damaged pump parts will affect the operation of the lubricator and cause it to fail in the performance of the duties for which it was designed. But the very nature of the mechanical oiler makes it possible to guard very effectually against both accidental damage and excessive wear. The pumps and their driving mechanism are enclosed in the oil tank and are submerged in the oil, so that the lubrication of the parts is perfect; moreover, the pumps run very slowly and the natural wear is very slight. Enclosed in the tank, the moving parts are thoroughly protected from knocks and blows, and there is no danger from dust. It is evident, therefore, that a well made mechanical oiler should have a long life under ordinary working conditions.

While the general features outlined are common to most mechanical pump lubricators, there are many different methods of working out the details.

There is a very interesting type of lubricator pump in which no valves are employed, movements of the plunger, in one case, and of the pump cylinder itself in another, causing intake and outlet ports to register alternately. In the case of the pump with the moving plunger-opened ports the plunger is rotated about a quarter of a revolution each stroke so that grooves in the plunger, extending from the bottom to a point above the ports, are brought opposite the ports at the proper time. Suppose the plunger is just commencing its upward stroke. It is turned so that one of its longitudinal grooves communicates with the port through which oil is admitted from the tank, and as the plunger rises oil is drawn in, passing through the port into the groove, down the groove into the space under the plunger. Meantime the outlet port is covered and kept closed by the plain part of the plunger. As the plunger reaches the top of its stroke it is turned so that the intake groove is moved away from the inlet port and that port is closed by the plain part of the plunger; at the same time, a second groove, similar to the first, is brought into communication with the outlet port, and as the plunger descends, the oil is forced up through the groove and out through the port into the feed pipe. Of course the bottom of the plunger never rises above the level of the ports, both of which are in the same horizontal plane. Not the least interesting feature of this pump is the manner in which the rotary movement of the plunger is obtained. This is done by the simple expedient of setting the eccentric which reciprocates the plunger so that it is not at right angles to its shaft, but tilted, as the illustration shows. The effect of this is to give the plunger the necessary oscillating motion; a little universal joint is interposed between the eccentric strap and the plunger to take up the motion which is not to be imparted to the plunger. The appearance of a set of these angle eccentrics at work is very curious, giving the impression of their having been accidentally knocked out of line, like a wheel after a collision.

The description of this and other types of force feed lubricators will be continued in the next issue of *THE AUTOMOBILE*, with illustrations showing the mechanism.

In the absence of valves, obstructions that may find their way into the pump are likely to be cut up by the shearing action of the plunger and sent through the passages in small particles which cannot clog the pipes and are not likely to do any damage anywhere else. There are other types of valveless pumps which will also be described.



## THE FIELD FOR THE AUTOMOBILE

By VICTOR LOUGHEED.

THE future of the automobile and of the industry founded upon its manufacture is a future plainly inscribed in the rolls of progress. Only the most benighted upholders of the equine era of road transportation have the hardihood to dispute its greatness. Indeed, so fast does one achievement crowd upon another in this newest of man's triumphs over the limitations of time and space, that the pessimistic predictions of the automobile's disparagers are given the lie by the accomplished fact almost as soon as uttered.

Yet it is an extraordinary fact that the most roseate prophecies of the automobile's conquests to come are commonly born of an ignorance of the facts which in its way is almost as dense as that affording inspiration to the hosts of motoring unbelief.

How many of you who read this have a really clear idea of what constitutes the field for the automobile? How many dealers in or manufacturers of automobiles have gaged the world's power of absorption for the new conveyance? What, if you please, in the automobile industry, may be taken to constitute over- and under-production?

It might prove of some interest to elicit a few supposedly expert opinions answering these questions, but because it is the purpose of this article to convey rather than to seek information, perhaps it may be safe to assume rather than to demonstrate the error that will be found in the generality of such opinions, and give facts that will speak for themselves.

It is only within the last twelvemonth that the industry has been torn by conflicting opinions concerning one manufacturer's widely advertised intention to proceed with all possible haste to the production of 10,000 cheap runabouts. Already many of these cars are on the highroads, and several manufacturers of prominence substantially as great as that of the one who had the temerity to pioneer the field are now known to be making plans for an early venture into the quantity production of low-priced, high-grade runabouts.

The astuteness of these venturesome ones is a source of ill-concealed concern to many who have the good of the industry at heart, so it is not apart from the subject to examine into this newest phenomenon of automobile development, with the view of ascertaining such facts as there are legitimately bearing upon this enormous impending expansion in the numbers of mechanically-propelled road vehicles.

The most trustworthy figures available to-day indicate a total of somewhat over 100,000 automobiles in the United States. These have found place with no very perceptible effect upon the use of horse vehicles, except in minor and altogether unimportant instances. Nevertheless, it is most unquestionably the fact that the future field for the automobile is the past and present field for the horse.

The automobile, in its logical place in economic evolution, can achieve full success at no point short of the utter extinction of the horse—for all except menagerie purposes. Admit all that is to be said for the horse—that he is a graceful, beautiful animal; that he is capable to-day of performing certain kinds of labor that to-day cannot be performed as efficiently, if at all, without him; that many individuals of the present generation, most of them unfamiliar with the automobile, find a keen delight in riding or driving him, and that he is safer than other means of transportation, which is flatly and statistically not true—and still not a single valid point is made against the future of the automobile.

The horse, and horse service and horse transportation, to-day is substantially as efficient as it ever can be. This is obvious. The automobile, practical as it has become, and great as are its past achievements and present conquests, is improved, inexorably and unremittently, hour by hour, day by day, month after month, and year after year. The horse, on the other hand, is an expedi-

ent, transiently justified by a centuries-old lack of anything better. The automobile is a vital factor in the development of the social organism, not to be given up or done away with any more than is reversion of the human race to the hand loom, cave dwelling, or sign languages, to be anticipated.

It being admitted that the field for the automobile is the field now occupied by the horse, it is necessary only to turn to horse-vehicle statistics to arrive at figures eloquent with facts as astounding as they are incontrovertible. According to figures compiled from the reports of the Eleventh Census—Part I, Manufacturers—there were manufactured in the United States, during 1900, *one million, six hundred and three thousand, three hundred and seventy-one horse vehicles!* Think of it, you automobile manufacturers. Over a million and a half horse vehicles a year, *year after year*, in a field that would appear to be filled, and in an industry that, if anything, is a losing game! Then ask yourselves again whether, so far from 10,000 automobiles being a great number, 100,000 of a single model would not be nearer the mark.

An analysis of the census figures referred to discloses facts of an import almost as weighty as that conveyed by their gross total. One of these bears on the field of the commercial vehicle, which is believed by many to possess an impending importance far greater than that possessed by the pleasure vehicle.

Horse-vehicle statistics absolutely fail to support this theory. Not only is the demand for pleasure vehicles very much greater than that for commercial vehicles, but what demand there is for commercial vehicles shows an enormous predominance in favor of the lighter types of such vehicles—such as are, in corresponding automobile types, practically certain to be mounted on chassis substantially the same as those used for pleasure cars. The census classifications are as follows:

### Production of Vehicles in the United States During 1900.

Family and pleasure carriages.....	907,482
Public conveyances .....	2,316
Business wagons .....	125,726
Furniture vans and wagons and caravans.....	1,725
Drays and trucks.....	7,417
Dump dirt wagons and carts.....	4,098
Coal wagons and carts.....	3,155
Ice wagons .....	1,144
Log and ore wagons.....	4,282
Hearses .....	797
Trade wagons .....	11,788
Street sweepers, sprinklers, etc.....	491
Hand carts, etc.....	8,107
Government, municipal, etc., wagons.....	1,108
Farm wagons and carts.....	405,513
Sleighs .....	118,222
Total .....	1,603,371

The foregoing excludes, of course, children's carriages and sleds, and, in fact, includes only two items to which possible exception may be taken—one, the 8,167 "Hand Carts, etc.," and the other, the 118,222 "Sleighs."

The latter, however, have no monopoly that is not certain to be invaded by the all-weather reliability of the automobile—already noted for its unfailing service under winter conditions that tie up horse and rail traffic absolutely. As for the 8,167 hand carts, their subtraction from the 1,603,371 still leaves an annual output of distinctively horse vehicles totalling 1,595,204, as far back as 1900. To-day the figure undoubtedly is materially larger. Just how much larger can be judged from the figures for 1890, which were 1,369,254—indicating a decennial gain of about 17 1-2 per cent.

Reference to the table shows that by far the largest figure is that of 907,482 "Family and Pleasure Carriages," leaving against this a maximum of not over 1,595,204 minus 907,482, or 687,722,

for the comparative field of the commercial vehicle. And even this is found to require some heavy subtractions.

In the first place, of the 118,222 "Sleighs," 76,880 are one and two-passenger pleasure vehicles, while the figures by no means show it to be certain that the remaining 41,342 sleighs, which are ambiguously listed as "Sleds, including 'Bobs,'" are all of commercial types.

Of the "Farm Wagons and Carts," 119,498 are "Light Wagons and Carts," which, whether or not justifying the appellation "commercial," certainly would in motor-driven form require pleasure-vehicle chassis, rather than anything now recognized as a "commercial automobile."

"Something of the same sort holds good of all of the 11,788 "Trade Wagons," and of 79,082 of the "Business Wagons," which are classified as "light."

The total of these various subtractions is 287,248, which, when added to the pleasure vehicles and subtracted from the commercial vehicles, gives 1,194,730 vehicles that under conditions of motor propulsion would approximate present pleasure-vehicle lines, against a possible 400,474 that might require a heavier or different construction.

In its sub-classification of the pleasure vehicles, the census table gives 730,270 "Four-wheeled for 1 or 2 Persons," of which

513,565 are "Buggies"; against these, it lists only 147,910 vehicles "for 3 or more Persons."

The conclusions from figures so significant cannot fail to be obvious. Is it not clear that the most numerous automobile of the future is certain to be the light, low-priced two-passenger runabout, costing about as much as a good buggy, a good horse, and a good set of harness, and perhaps capable of carrying one or two extra passengers in an emergency?

And is it not evident that, for every individual who may come to the use of the automobile from motives of its profit-returning possibilities, there are fifty people who will use it for purposes of pleasure, which is the highest of all utilities, and meantime be content to draw their income from some other source?

Moreover, is it not the plain presumption that, when the light type of automobile is fully developed, and is produced of a quality and at a price that the prospects of vast quantity production suggest in no uncertain way, then every horse user in the country will become a quick and ready convert to the new conveyance?

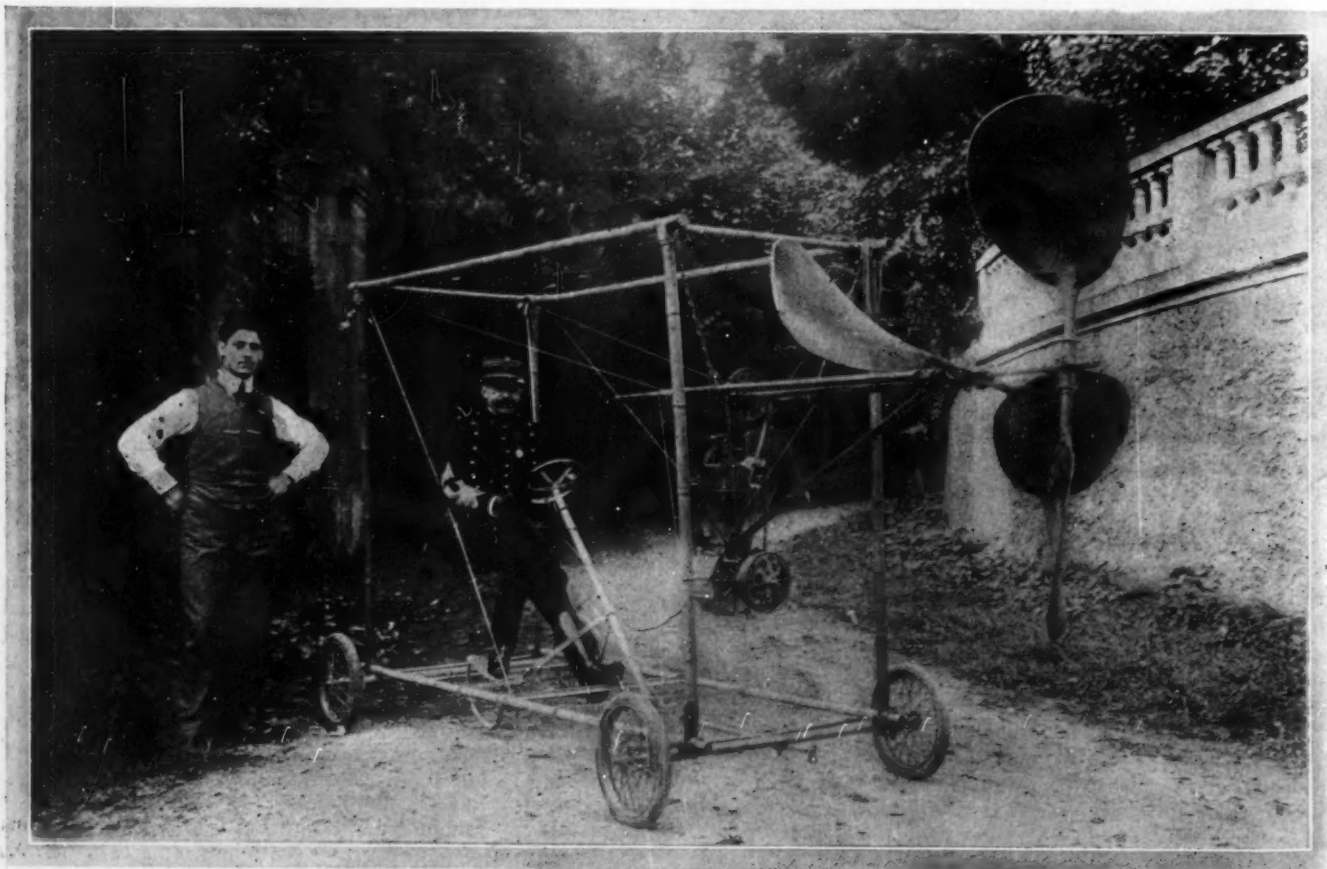
And then, when the automobile thus has achieved quantity as well as quality, will not the low-priced runabout, by its widespread use alone, do more in months for the good-roads and fair-legislation propagandas than has been done by the automobile clubs and periodicals in years?

## PROPELLER-DRIVEN AUTOMOBILES IN FRANCE

PARIS, Oct. 25.—Interest has been aroused in the subject of propeller-driven road vehicles by the performance of Anzani in traveling at the rate of 49 miles an hour on M. Archdeacon's motorcycle. A match is now promised between M. Archdeacon and Captain Feber, a French artillery officer who some time ago constructed a light chassis with a 16-18-horsepower Peugeot motor driving a two-bladed propeller. With this machine, which the captain only built to carry out private experiments and which would never have become known to the public but for an acci-

dental meeting with a journalist, it was claimed that a speed of 45 kilometers an hour had been maintained. M. Archdeacon doubts this claim and has asked for a friendly contest. When a new Antoinette motor has been fitted the motorcycle and automobile will probably be seen together in a public contest.

Some time ago similar experiments were made by the Curtis Mfg. Co., of Hammondsport, N. Y., with a propeller-driven tri-car, the motive power of which was a two-cylinder, 5-horsepower, air-cooled motor. It is declared in Paris that Curtis only copied.



CAPTAIN FEBER AT THE WHEEL OF HIS PROPELLER-DRIVEN ROAD VEHICLE, CAPABLE OF 45 KILOMETERS AN



## LETTERS INTERESTING AND INSTRUCTIVE

### The Connecting of Speed Indicators.

Editor THE AUTOMOBILE:

[448].—I have a combined speed indicator and distance counter on my car, which is driven by an enclosed flexible shaft from gears fitted to one of the front-wheel hubs, the indicator being on the dashboard. Several times within the past year and a half the gears have given out, through tooth breakage, distortion and plain wear, and I am about convinced that they are a hopelessly weak feature of the whole arrangement. I have been considering their rearrangement from what seems to me a more mechanical standpoint, and am about come to the conclusion that the indicator could be just as well driven from one of the change-speed gear shafts, under which conditions it would be less susceptible to injury. Do you think there is anything wrong either with the theory or the practice of the proposed remodeling?

Dubuque, Iowa.

DR. CHAS. S. BURKE.

Such an amount of difficulty as you complain of would seem to indicate something wrong with the means of attachment applied to your car, since similar arrangements are widely applied by the speed-indicator and odometer people with thoroughly satisfactory results. Probably it will pay you to consult with whoever sold you the outfit, with the view of having any faults in its equipment corrected. Nevertheless, your idea of driving the indicator from some less vulnerable point than the front-wheel hub seems to be very meritorious, and it might pay the speed-indicator manufacturers to give some study to this manner of attachment. An indicator geared to the propeller shaft, the countershaft, or any point too far back in the car to be affected by manipulation of the change-speed gear, should give readings as correct as could be taken directly from the rear wheels. It might be argued that the rear wheels undergo more slipping—because of transmitting the stress of the drive—than do the front wheels, but this could be overcome by basing the gear ratios upon an average of the actual number of revolutions observed in a considerable distance of travel.

### Why Automobiles Are Overpowered.

Editor THE AUTOMOBILE:

[449].—I have never been able to understand why it is that the average automobile requires so much power to run it, in comparison with the power available to run horse vehicles. A horse vehicle, weighing at least fifteen hundred pounds, and carrying as many as six or seven people, is capable of being pulled almost anywhere by two horses, yet an automobile of similar capacity, and perhaps half as much more weight, is commonly provided with a 30- or 40-horsepower motor. An explanation of this will oblige

Seattle, Wash.

OTTO T. KOEHLER.

There are a number of reasons for overpowering automobiles in the manner you comment upon. One reason is that they usually do weigh considerably more than horse vehicles of similar capacity, while another, and more important, is that they are built for going at higher speeds. This does not necessarily mean higher speeds on the levels, but takes into account the capacity for high speed up hills. You two horses will come to a crawl even on moderate grades with the load you mention, whereas the 40-horsepower automobile will waltz up the same hill at twenty miles an hour or more—which is ten times as fast as the horses will go, and requires more than ten times as much power. Normally, in ordinary service, the engine of a 40-horsepower automobile is not called upon to develop even as much as 10 horsepower, the rest of its capacity simply being a necessary reserve for hills or heavy, sandy and muddy going. Even the best automobile transmissions waste 25 per cent. of the power in conveying it from the motor to the driving wheels, so this constitutes a further reason for the high powers of the catalogues. On top of this, the power ratings average above rather than below the mark, because they are based upon experimental tests of short duration under laboratory rather than road conditions.

### Repairing a Honeycomb Radiator.

Editor THE AUTOMOBILE:

[450].—Will you please tell me what is the proper way to repair a honeycomb radiator? I have a car in which the radiator is of this type, being built of a multitude of small tubes, and it has sprung a leak that I find myself totally unable to repair. In using a soldering iron and solder to close the holes, the effect is to loosen up all of the tubes adjacent to the leak, by melting the solder away from them. I am afraid to attempt any further experiments with the radiator for fear I may spoil it altogether; but I suppose there must be some way of effecting a satisfactory repair.

JOHN E. ALBURN.

Brockton, Mass.

Because of the manner in which a honeycomb radiator of the type you describe is manufactured, its repair is very difficult without resort to highly-specialized factory facilities. The tubes are assembled and held together while one whole side of the radiator is immersed slightly in a vessel of molten solder. In this way, all of the tubes being soldered at one end together, there is no possibility of the progressive melting loose that you describe as so difficult to avoid. Unless you are able to make shift with a solder of very low melting point, worked with a comparatively cool iron, you had better send the radiator to the manufacturers for a proper job. It sometimes is possible, if the radiator has plenty of cooling surface, to fill up the tubes and the spaces between them as well, in the vicinity of the leak, with a fusible metal composed of antimony, tin, and bismuth. This expedient, of course, adds weight to the radiator and reduces its cooling surface, but unless the area affected is too considerable it renders continued use of the radiator practicable.

### The Rotations of a Rotary Gear Pump.

Editor THE AUTOMOBILE:

[451].—In fitting a rotary gear pump in place of a centrifugal pump, for circulating the water in the cooling system of a water-cooled car, in which direction should the gears rotate? In the shop where I am having the work done the foreman contends that the gear teeth, where they mesh with each other, should revolve toward the flow it is desired to produce. I claim that the gears should run in the opposite direction, so that the water would be fed through between them just as a band of paper would in the same circumstance. Which is right?

THOMAS G. McDONALD.

Lebanon, Pa.

The foreman is right. The analogy of the strip of paper is not a good one, because the water does not go through between the gears. It is pocketed, so to speak, in the spaces between the teeth, and is thus conveyed around the outer circumferences of the gear circles until it reaches the outlet pipe. This fact does, it must be admitted, give a rather peculiar appearance to the problem, since the first conclusion from a casual inspection of the gears in operation would tend to establish the notion that the water flows in the direction opposite to that in which the gears seem to be forcing it.

### A Question of Power.

Editor THE AUTOMOBILE:

[452].—Is it not a fact that the ordinary two-cycle engine is twice as powerful as a four-cycle engine of equal dimensions, both being run at the same speed? I should think, there being twice as many power strokes in the given time with the two-cycle, that it would be twice as powerful, but I am told that this is not so. If the two-cycle is not twice as powerful, why is this the case? Is it because of economy, or what?

EDWARD C. WALLER.

Quincy, Ill.

Theoretically, a two-cycle engine should give twice as much power as a four-cycle of the same size, run at a given rotative speed. Practically, with the present types of two-cycle engines, it is not possible to secure so much power because the impulses,

though twice as frequent, are not equally powerful. The reasons for this are several. Probably those of most moment are the wire-drawing and attenuation of the charges as they are inspired, and the retention of considerable burnt mixture to mix with each fresh charge. These factors combine to reduce the theoretical power output to as little as 30 or 40 per cent. (instead of 100 per cent.) more than the output of the similar four-cycle engine.

#### Securing a License in New York State.

Editor THE AUTOMOBILE:

[453.]—Will you kindly inform me through your paper how I can get my man a license to run my machine?

ALT. POESING.

Sheepshead Bay, N. Y.

Write to the Secretary of State, at Albany, who will give you full information, and supply you with an application form. The fee is \$2, which simply has to be sent in, accompanied by an application blank, on which is stated the makes of cars that the applicant considers himself capable of operating. No examination is required.

#### Alcohol for Anti-Freezing Solutions.

Editor THE AUTOMOBILE:

[454.]—Will you please answer in your columns whether one-half gallon of glycerine and one-half gallon of wood alcohol and two gallons of water will make a safe and reliable anti-freezing solution for an automobile the tank of which holds just three gallons of water?

A SUBSCRIBER.

Erie, Pa.

Either glycerine and water or alcohol and water constitute a very satisfactory anti-freezing solution, but the proportions must be based upon the temperature that is to be withstood. Probably the best way to be sure of having the mixture right is to make some and test it by exposing it out of doors and noting what temperatures it stands. Many experienced automobile users think that there is nothing too good to be said in favor of wood alco-

hol and water—the proportions being about half and half. If you try such a solution you probably will find that it works most satisfactorily.

#### THE INTELLIGENT USE OF GRAPHITE.

Editor THE AUTOMOBILE:

[455.]—As there seems to be some misunderstanding as to my position regarding graphite as a lubricant, allow me to explain that I do not advise its use simply as a makeshift in rough or loose bearings, to make a mud so thick that it will not "leave home," but I do advocate its use under good mechanical conditions, where ordinary fluid or non-fluid oil is used, except in cases where it is impossible to use anything but the lightest oil. In ball bearings, gear cases, differentials, roller bearings, etc., it is strictly O. K. if used intelligently. I have used it in shop practice as well as elsewhere, and have always found it there "with the goods," where severe work was demanded, but never use it in automatic or cup oiler with drop feed.

F. MERRILL BROWN.

Westover, Pa.

#### AUTO CENSUS FIGURES FOR 1904.

WASHINGTON, D. C., Oct. 29.—Detailed figures showing the output of the automobile factories of this country during the calendar year 1904, which will form a part of the census of manufactures for 1905, have been prepared by the Census Bureau, and show among other things that during that year 21,692 cars, valued at \$26,645,064, were manufactured in 1904 by the 178 establishments reporting. In addition to this automobiles to the value of \$879,205 were reported by establishments engaged primarily in the manufacture of other products.

For the first time in the history of the automobile industry the figures relating to automobiles have been segregated and reveal some interesting facts. In 1904 there were 12,131 runabouts manufactured, valued at \$8,831,504, and of this number 10,000 were gasoline, 455 electric and 677 steam. Touring cars to the number of 7,220, with a total value of \$11,781,521, were also made in that year, and of this number 6,444 were gasoline, 39 were electric and 737 were steam.

## A STORY OF YESTERDAY AND TO-DAY

By GEORGES DUPUY.

I SHALL always remember the year 1886, cycling in the Bois de Boulogne, Paris, on a glorious Easter morning, in company with my uncle. We were quietly pedaling under the green trees when we heard, in the distance, an unusual noise, like that of a pair of cymbals struck at rapid intervals. We thought the Salvation Army was somewhere in the vicinity, but a little further on an offensive smell of burnt petroleum made us discover, standing at the turn of an alley, a remarkable thing. It had the shape of a country buggy, set on immense outstretching springs and possessed four huge, iron-rimmed wheels. There were two small seats on the top and a bicycle handlebar in front. The strange machine was quivering all over like a suffering beast and smoking like a chimney, while something inside of it was all the time hic-coughing noisily enough to break the windows of the houses in the near vicinity.

A lot of inoffensive but puzzled pedestrians surrounded that mechanical orchestra, as two elderly gentlemen, one French, the other German bent over it, each armed with hammers and enormous wrenches. They were in shirt sleeves, tucked up to the elbow, with hands dirty and greasy, and faces oozing perspiration. I also remember very well a little pistonrod, trickling with dark oil, that would run fore and aft at a terrific pace; possibly that was the trouble. My dear old uncle, who ever possessed the greatest inventive imagination and could always give me judicious explanations on any subject on earth, told me that there was "something wrong with the boiler," and that they should unscrew some "blast pipe" he knew of to fix it, etc.

Meanwhile the two men—two old friends, I should judge—were addressing each other in terms that were much to be regretted, indeed, on such a beautiful morning. The German would

call his partner a "*poucre l'impécile*" (an imbecile), with his indescribable national accent, inflicting on his comrade the responsibility for the accident. In fact the conjuncture was amusing enough. The two unfortunate pioneers of the horseless vehicle could neither stop their motor nor cause the machine to move an inch!

These two persevering engineers, who, after much toil and drudgery, succeeded in pushing their noisy, grasshopper-like affair toward the gates of Paris at the rate of six miles an hour, were the German, Mr. Daimler, and the Frenchman, Mr. Levassor, the two great geniuses to whom the world owes nowadays the powerful, noiseless, swift, and easily driven automobile.

And, then, to-day.

Contemplate the fashionable multitude packed in the grandstand at the Vanderbilt Cup race: the flags streaming, the immense scoreboard telling how fantastically fast the men in the steel monsters are devouring the distances, the long brown stretch of oiled road on which, from time to time, a gray vision, surrounded by a little cloud of smoke, passes, as rapid as Thought, as terrible as Thunder and Death, and disappears in the perspective. The modern sportsman loves the automobile as he used to love the bicycle. He is a younger Cæsar in a larger circus, recreating himself with spectacles organized by two thousand years of progress. He cares not for the grumbling crowds who yet condemn the greatest of all sports, for he knows that the Conquering Automobile—that tiny black point which comes, over yonder, in an aureola of dust, checked in its tremendous ardor by the hands of a calm, cold-blooded man—is the product of intelligences who work, at their fearless expense, for the happiness of the human race!





BODY BUILDING DEPARTMENT OF THE PACKARD FACTORY AT DETROIT, SHOWING LIMOUSINES IN PROCESS OF CONSTRUCTION.

## BUILDING OF AN AUTOMOBILE BODY.

Deftness of touch in the handling of tools, nicety of taste, an eye to precision, and an intuitive conception of what will give style to the finished product, are essential characteristics of the successful practical automobile body builder. One half of success in body building depends upon the possession of a good plan, and volume of production makes possible the system and experience which makes for quality and without which practically everything is experiment. Typical and illustrative of a modern automobile body building plant, the limousine type is here taken as a sample, because it represents the most difficult constructive processes and the highest realization of the body builder's art.



SAWING AND SHAPING.

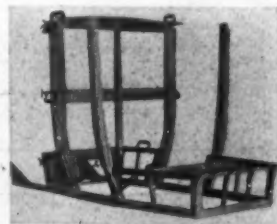
Starting with the first principles, the timber used must necessarily be of the choicest stock. This is necessarily prepared by a dry kiln, and seasoned for a proper time in a lumber storage house before being used. From the storehouse it is carried across a runway to a room where it is sawed to size and planed and shaped by machinery, and where costly jigs and patterns are used to insure exact reproduction of every curve and shape of the adopted standard used by the manufacturer.



SAWING THE DOOR POSTS TO TEMPLET.

From the sawing and planing room the material next goes to the body making department, which must necessarily be of ample size and well lighted to handle the work sys-

tematically. In this room the wood frames are set up by skilled workmen, who realize that bodies for automobiles must be made to stand a much more severe strain than those manufactured for carriage service. Take, for instance, the door posts of a limousine body. They are made from solid timber roughed out to templet by special machinery and afterward finished by hand work. All the joinings made are lock jointed, secured by glue and reinforced by screws, and there isn't a nail used in the entire construc-



PARTLY ERECTED FRAME.

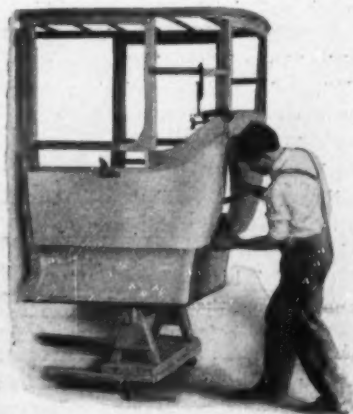


BASE AND LOWER PART OF FRAME WORK.

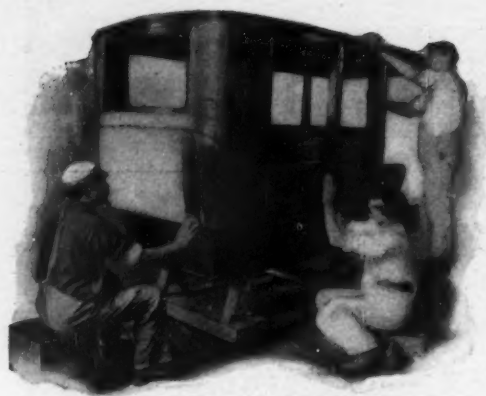
tion of the body in a well regulated factory. After the frame has been surfaced (and this work is

done by hand) it is treated with a water-proofing solution to prevent the ordinary deteriorating effects of moisture.

The aluminum sheeting, most of which is one-sixteenth of an inch thick, is all molded into proper shape by hammer. As will be noted in the illustrations, the side sheets extend around the back of the body to the upright posts which form part of the rear window casing. As the greatest stresses



ATTACHING ALUMINUM PANELS.



RUBBING DOWN IN THE PAINT SHOP.

sible a beautiful and enduring finish, and the combination of hammered aluminum panels over a properly designed wood body produces a wonderfully strong and at the same time a very light body. The aluminum is secured to the frame by innumerable screws, and these screws are covered with beading which in turn is secured to the frame.

The roof of the entire body is of three layer veneer, the lower layer being mahogany, and while this is covered on the inside of the body with cloth, over the driver's seat it is finished in the natural color. The window frames are also of natural finish mahogany, and all windows slide down completely out of sight, while the wind shield is of the usual pattern that slides to the ceiling over the driver.



FITTING GLASS FRAMES.



IN THE UPHOLSTERING DEPARTMENT.

Some idea of the time occupied in bringing a limousine through all the different stages of priming, filling, rubbing, etc., to the last coat of varnish may be obtained when it is known that it takes sixty days alone for the paint shop to do its work. The upholstery is done while the

body is in the rubbing varnish state, and it spends a week usually in this department. The glass frames are fitted to the body upon a dummy chassis in the body room, and after being glazed and finished are assembled into place in the finishing room. Expert body makers make it a point to handle the finished body just as little as possible. When the finished body is to be shipped alone, a very substantial crate is used. Inside the crate a cloth cover is drawn over the body and made fast to the runners before loading. In the illustration used to show the body in the "last stage of its eventful history" of manufacture, the cloth was removed before photographing, so as to show the position of the body in the crate.

PACKARD LIMOUSINE  
CRATED AND READY TO SHIP.

are at the corners, these aluminum panels in one solid piece around the corners make a thoroughly rigid construction and prevent cracks at the corners. The hammering of aluminum is an art, for not only do these panels stiffen the frame work, but they render possible

## HENRY FORD ON AUTO RACING.

"From an advertising standpoint I am frank to say the Ford Motor Company has found racing most valuable and profitable," says Henry Ford. "We have been too busy this season to take a hand in it, but we have by no means renounced the game—we have not yet learned to despise the bridge that brought us over, nor forgotten that there may be other streams yet to cross. I make the assertion that the designer who can build a car worthy of a place in the Vanderbilt Cup contest can build just that much better touring car or commercial vehicle, while the designer who lacks the experience to be gained only by participation in such contests lacks equipment for solving his everyday problems. Of course it is expensive—all experience is. And once on the high road to success, some of us forget the benefits we once derived from it—like all other advertising, we are apt to consider afterwards that perhaps the money might have been saved and the results obtained, just the same. When we arrive at that point we are likely to purchase another bunch of experience and pay more dearly for it than we did for that we got on the race course.

"When American manufacturers have demonstrated their ability to design and build automobiles, from motor to tires, capable of bringing home and retaining the Vanderbilt Cup, we shall see the tide of automobile importation turn, and it will no longer be the fad to pay twice the price for a foreign car than an American car of equal quality can be bought for.

"Is it necessary for us to use higher grade materials, more careful methods, better tires, ignition systems or what not? Let us get about it and see that we demonstrate what we claim—that American workmen, American brains and American methods are capable of equaling if not surpassing those of any other nation in the world.

"Meantime, let's give the foreign victor all the credit that is his—all we should have claimed had an American car won the cup."

## PRIMITIVE FRENCH AUTO DEMONSTRATION.

PARIS, Oct. 19.—Early next month a public demonstration will be held on the Place de la Concorde, Paris, opposite the Automobile Club of France, of all the ancient types of automobiles France can muster. The organizing committee is beating up entries and has already discovered half a dozen primitives still fit to take the road. The most venerable is a Hildebrand-Wolfmuller motor bicycle built in 1893 by H. O. Duncan, an English pioneer motorist, in his Paris workshop. One of the first exploits of this machine was to catch fire in the passage of a coffee-house at Lille while a groom was cleaning it with gasoline near a naked light. The tires burst with a loud report, causing the inhabitants to imagine that the house was falling in. Georges Osmont, a veteran motorist and one of the Paris-Bordeaux survivors, will ride the machine in the Paris demonstration. One of the very first machines to leave the Panhard & Levassor factory—fourteen long years ago—will be brought out by its present owner, H. Martineau. It has a 1¾-horsepower two-cylinder Daimler motor V-shaped. Another Panhard & Levassor of an early date, with a 4½-horsepower motor, is to be shown by M. H. Méline. The Renault veteran is a giddy seven-year-old of 2¾-horsepower with which Mr. Girard, the firm's cashier, is going to show a burst of speed. "Szisz's record won't be broken," says Mr. Girard, "but the younger Renaults will blush with shame on hearing the rattle of the old one." The DeDion entry came to light ten years ago as a quadricycle, but was transformed at the age of one year into a voiturette. It has a 3-horsepower motor and a 2-speed gear. From the Place de la Concorde the "Vieux Tacots" will amble up the Champs Elysées, loosen their stiff joints in the Bois de Boulogne, and show what they are capable of on the Suresnes hill, where most of them first learned to run straight when they came from the factories. It was a task in those days, and now what a difference in this and other particulars.



## THE YORK COMPANY'S 1907 PULLMAN CAR

**L**IGHT touring cars, with sufficient power to carry five passengers over all kinds of roads, but of moderate size, so as to be easy on tires, and capable of maintenance by men of moderate means, have become deservedly popular, and are increasing in numbers. One of the latest cars of this general type is the York Model E Pullman, manufactured by the York Motor Car Company, of York, Pa., illustrated herewith. The car is fitted with a four-cylinder vertical water-cooled motor of 20 horsepower

four points only, and the full bearing is brought into action gradually, so as to avoid sudden gripping and the unpleasant consequences to the occupants of the car.

Ignition is by jump spark, a special feature of the ignition system being the timer. This device has a body which is stationary, the timing being varied by the movement of a cam inside the timer. There is but one moving part, and this is adjustable by means of a set screw on the outside, where it can be easily

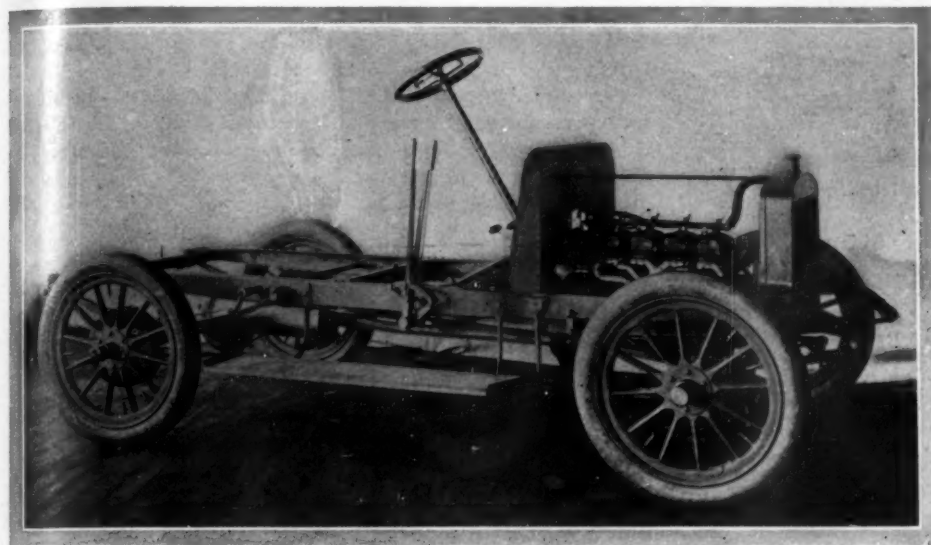
reached. The manufacturers state that adjustments are seldom required.

Pressed steel of channel section is used for the framing, the engine and transmission being hung on sub-frames. The main frames are narrowed toward the front. Corners are reinforced by heavy gussets, and all parts are put together with hot rivets. The frame is carried on four semi-elliptic springs, 46 inches long in the rear and 40 inches in the front.

Chrome nickel steel is used for all the gears in the three-speed change-speed mechanism, and the shafts are mounted on imported ball bearings. Drive is direct on the high speed, with the countershaft stationary, the countershaft pinion being thrown out of mesh when the direct drive is engaged and in mesh.

The front axle is of heavy steel tubing, having an outside diameter of 2 1-2 inches; interior reinforcements are used at each end, these consisting of smaller pieces of steel tubing closely fitting inside the axle tube, and extending from the steering knuckles to points beyond the spring perches. The knuckles are of the Elliott or forked pattern and are of steel forgings. A Timken rear axle is used, equipped throughout with roller bearings, and having adjustable spring perches. The brake drums are 12 inches in diameter. The wheels, of the prevalent artillery type, have cast steel flanges and 1 1-4-inch spokes; they are 30 inches in diameter, and are shod with 3 1-2-inch tires of the same size front and rear.

Screw and nut steering gear is fitted. The hollow steel column on which the steering wheel is mounted, and which transmits the



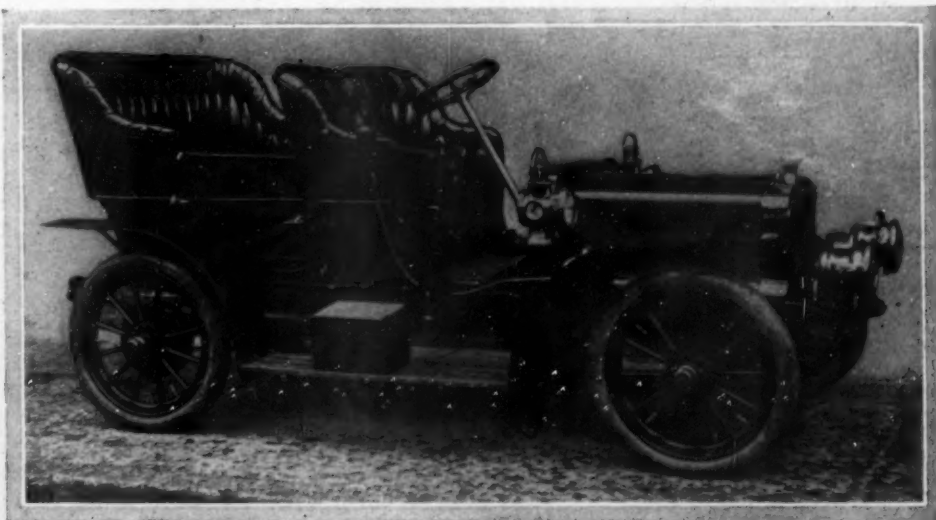
CHASSIS OF PULLMAN 20-HORSEPOWER LIGHT TOURING CAR.

and has a reversed cone clutch, three-speed and reverse progressive sliding-gear transmission and final drive by propeller shaft and bevel gears. Either touring or runabout bodies are fitted, or bodies with which a detachable tonneau or a rear deck may be used at will. The car weighs about 1,800 pounds with tanks full.

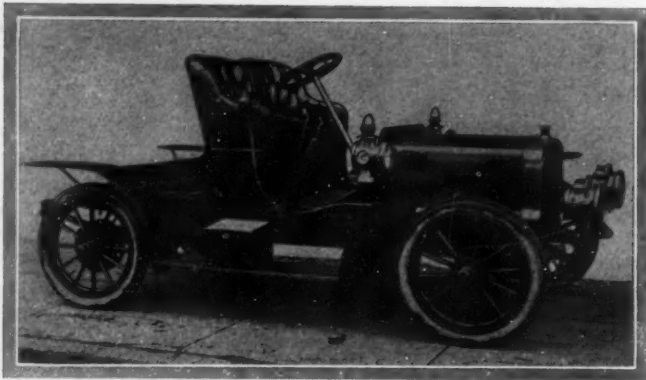
The cylinders are individually cast with integral heads and water jackets; the bore and stroke are each 3 3-4 inches. Cylinders and pistons are finished on a Heald cylinder grinder, and the pistons have three rings and an oil groove each. The connecting rods are steel drop forgings with removable big end bearings of Parson's white brass and hard bronze bushings at the piston pin ends. The drop-forged steel crankshaft has five main bearings and is lubricated by splash, oil being sent to the crankcase by a force feed oiler. Main bearings are attached to the upper half of the crankcase, the lower half, which, as well as the upper part, is of aluminum, serving as an oil-retaining casing.

All the valves are alike and interchangeable, and all are placed on the same side of the motor and operated by a single camshaft driven by bronze and fiber gears inclosed in an aluminum housing cast integral with the crankcase. The exhaust manifold is made in a single casting, and to it is bolted the aluminum inlet piping, which is so arranged as to be easily removable.

To the cast-iron flywheel is bolted a cast-iron drum for the reversed cone clutch, which is faced with leather. This clutch is so constructed that the drive is at first taken up at



PULLMAN LIGHT TOURING CAR WITH DETACHABLE TONNEAU.



SIDE VIEW PULLMAN MODEL E AS A RUNABOUT.

motion of the wheel to the gear and connecting rods, is inclosed in a brass tube. The wearing parts are inclosed in a dust-proof casing, and provision is made for lubrication; adjustment is made when wear occurs by means of a ball bearing take-up, so that all lost motion is readily disposed of.

Manganese bronze has been used to a considerable extent in cases where the manufacturers believed this metal to be better than forged steel. The clutch pedal, for instance, is of manganese bronze, as are also the emergency brake lever and the foot-brake pedal.

In the construction of the dash wood is employed, with a covering of sheet steel. Particular attention has been given to the problem of securing a radiator that would stand hard service without suffering damage, and the one adopted is of the flat tube type, the tubes being disposed vertically. Owing to the shape of the tubes the damage that usually follows freezing in a radiator with tubes of circular cross section is said to be entirely avoided, as the tubes, when the water freezes, will merely bulge a little at the sides without cracking. The manufacturers state that several men standing on the face of the radiator will not start the joints or in any perceptible way strain the construction.

The wheelbase of the York light touring car is 92 inches, which is short enough to make the car very handy in crowded streets and very easily handled generally. Braking is usually done through the pedal operated band and drum brakes on the rear hubs, these drums being 12 inches in diameter and broad and substantial in order to stand up under the hard work imposed on them. The emergency brake, operated by a lever in the usual way, consists of a band and drum on the propeller shaft. When this brake is applied the clutch is automatically disengaged.



FRONT VIEW OF PULLMAN LIGHT CAR.

Bent wood construction is used for the body of the car, with the usual arrangement of continuous mud guards and running-boards on each side. On one side, on the running-board, is the tool box and on the other side the battery box. The front seats are of the individual type, and the rear seats 52 inches wide, the tonneau being detachable. When the tonneau is removed, which is accomplished by taking out two bolts, there are no fixtures or fastenings, for it is visible on the front part of the body. A sloping rear deck can now be attached if desired.

With detachable tonneau, the car costs \$1,850; with rear deck instead of tonneau, \$1,800; without tonneau or rear deck, \$1,750; and with both tonneau and rear deck, so that the car can be changed from touring car to "cross-country" runabout, \$1,900.

With regard to equipment, the York car is sent out with two acetylene gas headlights with generator, two side or dash lamps burning oil and an oil-burning tail lamp.

Test cars have been on the road since last May, the manufacturers state, and have been given all kinds of severe road work in order to thoroughly test the construction by actual practical working condition tests, and the results were considered highly satisfactory in every way.



TWELVE-CYLINDER MAXWELL HAVING A WORKOUT.

### TRYING OUT THE TWELVE-CYLINDER MAXWELL.

TARRYTOWN, N. Y., Oct. 29.—The twelve-cylinder racer built by the Maxwell-Briscoe Motor Company for the Vanderbilt Cup race will be a participant in the big Florida meet in January. In the vicinity of the Tarrytown factory the car is being thoroughly tested, and it is confidently expected that it will make a very creditable showing in the Ormond-Daytona races. Its construction was begun too late to get it in readiness for the American Elimination Trial.

### TO MAKE LEATHER WATERPROOF.

The following is a simple method of making leather waterproof. Soak the leather in a bath of soapy water in which 50 grams of common soap have been dissolved in two pints of water. The leather can then be coated over with a solution of linseed oil and kerosene. This should be used hot.

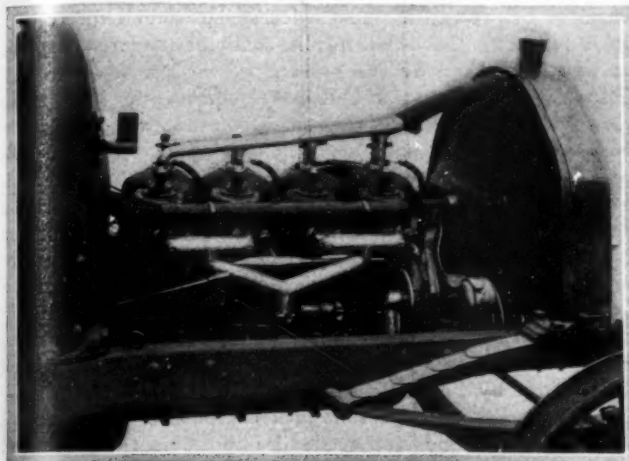
### FRENCH RECEIPT FOR ANTI-RUST PASTE.

A good anti-rust paste can be formed as follows, says *Les Corps Gras Industriel*: Take 25 parts of suet, 23 of white wax, 22 of olive oil, 25 of turpentine, and 10 of mineral oil. The different ingredients should be mixed at their average melting temperature, being well stirred up during the operation.



### PREMIER 1907 FEATURES.

Practically the same chassis will be found in each of the four models that will constitute the line of cars manufactured by the Premier Motor Manufacturing Company, of Indianapolis, for 1907; the most important differences will be in the motor-cooling systems, both air- and water-cooled motor now being employed as well as an air-cooled motor. Various types of bodies will be fitted, these determining to a large extent the designation of the



NEW 24-HORSEPOWER WATER-COOLED PREMIER MOTOR.

model. The new water-cooled car has already been described in a general way, but some further details will doubtless be of interest.

From the four-cylinder, 24-horsepower motor the power is transmitted through a nine-plate multiple disk clutch, of alternate disks of hardened steel and phosphor bronze in an aluminum casing, a three-speed and reverse selective sliding gear transmission with direct drive on the high-speed propeller shaft with two Spicer universal joints, and bevel gears to the live rear axle. The motor has its valves, all mechanically operated, set on opposite sides of the individually-cast cylinders and operated by two camshafts inclosed in the crankcase and having their cams attached by Woodruff keys and taper pins. Each camshaft runs in three bearings. The crankshaft is drop-forged, finished by grinding after a special heat treatment, and has an integral flange to

which the flywheel is bolted; it runs in five bearings lined with Cramp's white brass, adjustable for wear. Bolts are securely locked throughout the motor. Pistons have spherical heads and are fitted with four rings each, the bottom ring, low down, being an oil-distributing ring.

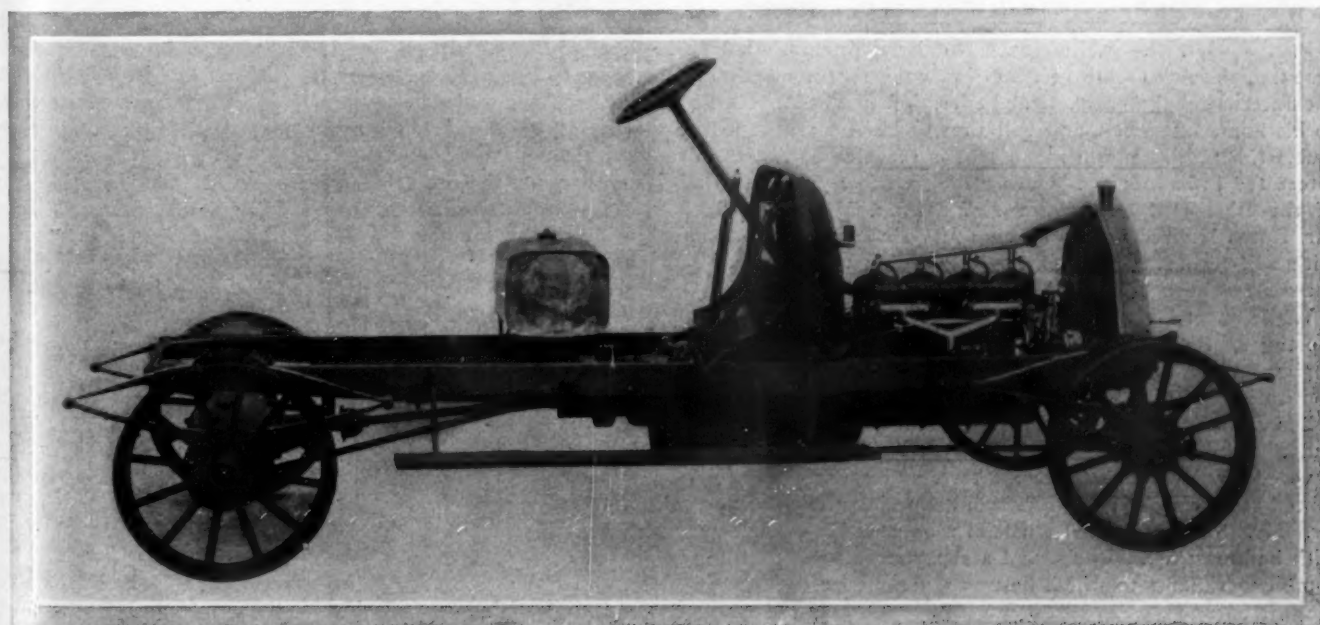
Ignition is by jump spark, the sources of current being a set of dry cells and a six-volt 60-ampere storage battery carried under the driver's seat; a Splitdorf quad coil is mounted on the dash and the cables from it to the spark plugs run through a large fiber tube. Spiral gearing on the rear end of the exhaust camshaft drives the timer, which is mounted on a vertical shaft. A Hill oiler under the footboard forces oil to the engine, a sight-feed gang being mounted on the dash. The fan behind the Mayo radiator is mounted on ball bearings. Hess-Bright ball bearings are fitted to the change-speed gearshafts to the front wheels and to the rear end of the propeller shaft.

Forged steel of I-beam section is used in the front axle. The live shafts of the rear axle run on roller bearings. A torsion rod of new design, with spring buffers, extends from the bevel gear housing to the center cross member of the pressed steel frame. Steering gear is of the screw and nut type, with large bearing surface. Wheels are of wood; rear wheels are attached directly to the live shafts of the rear axle. Springs are full elliptics throughout.

The standard equipment of the Premier car consists of two gas headlights, two oil dashboard lamps, an oil tail light, acetylene generator, horn, tools, and tire repair kit.

### A GROWING NUMBER OF MUNICIPAL AUTOS.

KANSAS CITY, Mo., Oct. 29.—The advantages of municipal automobiles have been demonstrated so clearly to the city officials that two Ford N runabouts have been purchased for inspection purposes, one each by the water and park departments. The cars were purchased after a test of thirty days, during which they demonstrated that twice the ground could be covered than was possible with horses. Much more work is now done by the man with the car, and it is likely that the whole department will be similarly equipped if results are equally satisfactory in the future. The car used by the park department is for the superintendent and saves him half his work, he states. The police department has authorized the purchase of two motor ambulances, and investigations of various makes are now in progress. Kansas City seems to be very much alive to the requirements of the age.



CHASSIS OF NEW WATER-COOLED PREMIER CAR FOR 1907, TYPICAL OF ALL PREMIER CHASSIS FOR NEXT SEASON.

## CLUB DOINGS THROUGHOUT THE COUNTRY

### Capital City Autoists Organize for Defense.

WASHINGTON, D. C., Oct. 29.—A well-attended meeting of the Automobile Club of Washington was held on the evening of October 23, to devise ways and means to bring about a cessation of the outrages that a large number of automobilists of this city have suffered at the hands of Constable Collins and the authorities of Glen Echo, Md., located on the Conduit road. After setting forth the purpose of the meeting, President Duvall called upon Attorney Fulton, who had been retained by Col. Winter, a member of the club, to take the two cases that had been filed against him into court, to give the club some idea of the legal phases of the case. Mr. Fulton told at great length of the researches he had made into the laws of Maryland, and of the rights accorded the town of Glen Echo, under the charter granted it by the state of Maryland. Under that charter, the attorney stated, Glen Echo has absolutely no authority over the Conduit road, which is owned and maintained by the federal government, though the town has undertaken to police it.

The meeting resulted in the appointment of a legal committee of three members, of which President Duvall is one, to take charge of the legal affairs of the club, and particularly to investigate the Glen Echo outrages. It was also decided to call a mass meeting of automobilists in order to get more concerted action. This mass meeting was held last Saturday evening, and was marked by a large outpouring of automobilists. President Duvall, of the Automobile Club of Washington, presided. The Automobilists' Protective Association was quickly formed, Mr. Duvall being elected president; Leroy Mark, secretary, and R. B. Caverley, treasurer, and a law and grievance committee of five appointed to take charge of the matter and fight the cases in the courts. Nearly \$500 in cash was subscribed, and enough more was promised to bring the amount up to \$1,000.

It is now proposed with the fund that is being raised to make two test cases, one to determine the question whether the municipality of Glen Echo has any jurisdiction over the Conduit road, and second, whether the 1906 automobile law of Maryland is constitutional.

### Aero Club Delegate Returns to Boston Home.

BOSTON, Oct. 29.—A. Lawrence Rotch, of Boston, who represented the Aero Club of America at the recent meeting of the International Aeronautical Federation in Berlin, returned to his home last week, and will shortly make a report to the club, which will contain much that is of value to Americans interested in ballooning. During the past few years the staff of the Blue Hill Observatory, of Milton, Mass., of which Mr. Rotch is director, has sent up fifty-six sounding balloons with self-recording instruments attached, and fifty-three of these have been recovered.

While abroad Mr. Rotch attended the twenty-fifth annual meeting of the German Ballooning Society, of which he is a corresponding member. Mr. Rotch was also present at the convention of the International Aeronautical Society at Milan, as the representative of the Blue Hill Observatory and the United States Weather Bureau. That meeting was devoted largely to scientific matters, and reports were presented upon various expeditions and experiments in the upper air. Mr. Rotch presented a partial report on his experiments with balloons at St. Louis, and a report was presented upon some experiments to which he was a party over the ocean in the torrid zone. These experiments determined definitely that the theory that the air ten miles above the equator is as cool as at the same altitude in temperate zones is correct.

### Ira M. Cobe for Presidency of the Chicago A. C.

CHICAGO, Oct. 29.—As November 8, the date of the election of officers of the Chicago Automobile Club, draws nigh, the members of the big organization are taking unusual interest in the event. John Farson, the present executive, and also president of the A. A. A., has declined to stand for re-election, and Ira M. Cobe will in all probability secure the place. He was nominated by the present governing board to succeed Mr. Farson last Tuesday. During the prosperous season of 1904-5 Cobe was president of the club, and is now head of the building auxiliary. The supporters of Cobe base much of their efforts on the splendid work done by the candidate in directing the building plans. The actual work on the new structure was started Wednesday. For the past two or three weeks a wrecking gang has been taking down the building, which formerly occupied the property in Plymouth court, near Jackson boulevard. The building ought to be far enough along by Thanksgiving to enable the cornerstone to be laid on that holiday. The architects say the building itself will be done by February 15.

President Farson says that lack of time to devote to his official duties in the club make it impossible to let himself be put up for re-election. He has also decided not to accept the renomination for the presidency of the national body, the American Automobile Association, for another term, if offered. On the slate which has been prepared Treasurer Hyman and Secretary Sidney S. Gorham are on for re-election. For first and second vice-presidents, Frank H. Pietsch and Harry J. Powers are new names. The nominating committee, consisting of T. J. Hyman, L. E. Myers and F. H. Bartlett, drew up the following ticket: President, Ira M. Cobe; first vice-president, Frank H. Pietsch; second vice-president, Harry J. Powers; treasurer, T. J. Hyman; secretary, Sidney S. Gorham; directors, John Farson, B. H. Marshall, S. K. Martin, Jr., A. F. Banks, L. E. Myers and Joseph F. Gunther.

The selection of Mr. Gunther as a member of the board of directors is considered as a recognition of the good work done by the dealers during the past summer in the way of promoting motoring events like the Elgin-Aurora reliability run, the Algonquin hill-climb and the Cedar Lake economy test. Mr. Gunther was chairman of the committee which handled these contests, and it was largely due to his activity that they were the successes they were. Heretofore the club has been opposed to men connected with the motor-car trade being on the board, but the new regime evidently stands ready to welcome the tradesmen.

A banquet will be held on the night of the election. Polls will be open from noon to 9 p. m., and the returns will be given to the members while at the banquet. The retiring officers will then give their addresses of farewell, and the incoming ones theirs of welcome. It is probable that a "member's" slate will also be offered.

The trophy, which was won by Henry Paulman, with a 28-32 Pierce-Arrow in the Chicago-Cedar Lake tour, was presented to him Tuesday. It was the only cup offered by the Chicago Motor Club and the Chicago Automobile Trades Association for the event. Referee Greenburg received no protests on the award. In a few days it is expected that the decision will be rendered on the awarding of the Class B trophy in the Algonquin hill-climb to the Jackson. The Buick protest is said to have been overruled.

A century race, beginning at midnight New Year's eve, 1906, and ending in 1907, given by the Chicago Motor Club, is being seriously talked over here, and Joseph Gunther, Thomas Hay, Walter Githens and others are behind the



movement. The idea of one of the enthusiasts is to go over the Elgin-Aurora route. The club will hold a general meeting during the present week, and it is probable the board of directors will be increased from five to nine members.

#### Toronto Club's Good Roads Prizes Prove Popular.

TORONTO, ONT., Oct. 29.—At a recent meeting of the board of directors of the Toronto Automobile Club, representatives of the surrounding municipalities were present by invitation to discuss the conditions affecting the awarding of prizes offered by the club for the improvement of Canadian roads. Mayor Richardson, of East Toronto, and Mayor Smith, of Toronto Junction, were most emphatic in stating that they were about to enter on an active campaign in the direction of improved roads in their municipalities. Reeve Young, of Scarboro, explained the steps already taken by their council, and stated that their policy of road improvement would be continued with even greater energy in the future. It is understood that all three of these municipalities will have several entries in the good roads competition.

#### Bay State A. A. Hold Gymkhana Games, November 3.

BOSTON, Oct. 29.—The Bay State Automobile Association is to hold a set of gymkhana games on the grounds of the Newton Athletic Club in Newton next Saturday. The committee in charge has arranged eight events to test the skill of drivers in handling their machines. Since the recent gymkhana games of the Worcester Automobile Club, which were attended by a number of members of the Bay State Association, interest in this type of contest has been growing.

#### CLUB DOINGS IN GENERAL.

CARBONDALE, PA.—The Carbondale Automobile Club has become active and has instituted a series of fall runs, the first of which was held October 13 over the Pocono mountains. Fifteen automobiles participated in the run.

JOPLIN, Mo.—The Jasper County Automobile Club, which was organized here a few weeks ago, is rapidly increasing its membership, forty-five active members being on the roll at the present time. There are 175 registered machines in Jasper county and it is hoped to secure the owner of each of these as a club member. The club has leased quarters at 416 Joplin street and is now permanently located there.

NEWARK, N. J.—The New Jersey Automobile and Motor Club's active membership now numbers 500, of whom 100 have joined since the middle of last May. The securing of the new club house at the corner of Broad and Chestnut streets and its remodeling into an up-to-date home for the club has acted like an inspiration on the membership. An associate membership is to be established for those who are not active automobilists, who will be eligible to all the club's privileges except that of voting and holding office.

## THE AUTOMOBILE CALENDAR.

### AMERICAN.

#### Shows.

- Dec. 1-8.....—Seventh Annual Automobile Show of the Automobile Club of America, Grand Central Palace, New York City, under the patronage of the American Motor Car Manufacturers' Association.
- Jan. 12-19.....—Annual Automobile Show of the Association of Licensed Automobile Manufacturers, Madison Square Garden, New York City.
- Feb. 2-9.....—Chicago Automobile Show, Coliseum and First Regiment Armory. S. A. Miles, manager, 7 E. 42d Street, New York City.
- Feb. 11-16.....—Detroit, Mich., Sixth Annual Automobile Show, Light Guard Armory, Tri-State Automobile and Sporting Goods Association; E. E. McMasters, manager.
- Feb. 18-23.....—Fifth Annual Automobile Show, Buffalo, Convention Hall. D. H. Lewis, manager, Teck Building, Buffalo.
- March 9-16.....—Boston Automobile Show, Mechanics Hall and Horticultural Hall, Boston Automobile Dealers' Association. Chester I. Campbell, manager, 5 Park Square, Boston.
- April 6-13.....—Montreal, Canada, Second International Automobile and Sportsman's Exhibition. R. M. Jaffray, Manager, 309 W. Notre Dame Street.

#### Tours.

- Nov. 3.....—Boston, Mass., Gymkhana Sports of the Bay State Automobile Association, at Newton Athletic Club grounds.
- Nov. 7-10.....—New York, Commercial Vehicle Test, under the auspices of the Automobile Club of America.

#### Race Meets and Hill Climbs.

- Nov. 6.....—Newark, N. J., Weequahic Park, Waverley, Election Day Race Meet of the New Jersey Automobile and Motor Club.
- Nov. 29.....—Riverside, Cal., Thanksgiving Day Hill Climb, Box Springs Grade Hills.
- Jan. 22-26.....—Ormond-Daytona (Florida) International Race Meet, Florida East Coast Automobile Association.

### FOREIGN.

#### Shows.

- Nov. 1.....—New Zealand International Exhibition opens at Christchurch.
- Nov. 1-16.....—Berlin (Germany) Automobile Exhibition.
- Nov. 15-24.....—London Olympia Motor Show.
- Nov. 23-Dec. 1.....—London Stanley Show, Agricultural Hall.
- Dec. 7-23.....—Paris, Ninth Annual Salon d'Automobiles, Grand Palais.
- Dec. 15.....—Calcutta, India, Exhibition of Automobiles, etc., Automobile Association of Bengal.

#### Race Meets, Hill-Climbs, etc.

- Oct. 28.....—Gallion (France) Hill Climb.
- Nov. 5-12.....—French Small Car Trials, "L'Auto" Cup.
- Nov. 12-17.....—Australian Reliability Trials.
- Dec. 1.....—La Coupe de Salon Motor Boat Race.



THE AUTOMOBILE CLUB OF SPRINGFIELD, MASS., GAVE AN AUTO RIDE TO THE CHIEFS OF POLICE DURING THEIR CONVENTION.

## DUSTLESS ROAD EXPERIMENTS ABROAD

CONSUL-GENERAL FRANK H. MASON writes from Paris that in a newspaper paragraph published in America during the past summer the statement was made that certain American tourists, traveling by automobile through France, had been annoyed by the coal tar on certain roads adhering to the wheels and being thereby spattered over their car and the clothing of its occupants. Mr. Mason continues:

The impression created in some quarters by this publication has been that tarred roads have not, on the whole, proved successful in this country. In reply to several inquiries on this subject from persons interested in road improvement in the United States, the following information has been obtained from authentic sources:

The treatment of macadamized roads and streets with crude petroleum as a preventive of dust in summer and mud in winter was first attempted in southern France ten or fifteen years ago, and appears to have been successful for the suppression of the dust caused by ordinary traffic. But for obvious reasons the use of petroleum soon gave way to that of coal tar, which, as a by-product of gas manufacture, can be bought in nearly every district of France for 5 to 7 centimes per kilogram; that is, \$10 to \$12.50 per metric ton of 2,200 pounds. Coal tar has the additional advantage that, unlike oil, it hardens when exposed in a thin layer to the action of the air, covering the surface of the road with a practically air and water-tight skin, which not only holds down the dust in dry weather, but prevents water from penetrating the roadway in time of rain, provided the road itself is well constructed and the tar properly applied.

### How the French System Is Applied.

One of the first important experiments made by the French department of bridges and roads was on the national route from Oran to Mers-el-Kébir, in the Algerian department of Oran. The test was made on a portion of the road leading from the city to a quarry, and over which the hauling of stone is heavy and constant throughout the year. The success of the system was fully demonstrated, and it has since been adopted and applied to many country roads and macadamized city streets throughout France. From evidence carefully collected and confirmed by the "Touring Club de France," it appears that tarred roads have been uniformly successful wherever the conditions have been normal and the work properly and thoroughly performed. The following conditions are essential: That the road shall be solid, well built, properly drained, and free from subterranean infiltration of water. The surface of the roadway shall be first swept, then washed free of dust, and allowed to remain undisturbed until completely dry. The operation of tarring shall be undertaken only in warm weather. The surface of the roadway shall then be spread with a coating of hot liquid coal tar, of such consistency as to be readily spread with a broom, so as to even up slight depressions and completely cover the surface. While the tar is still soft it should be strewn with a coat of clean sand or fine gravel and then left to cool and harden. Five or six days later a second coating of tar and sand should be applied in the same manner.

For the first coating the quantity generally used for country roads is 12 liters (about 3 1-4 gallons) of liquid tar for 8 square meters (86 square feet, or 9 1-2 square yards). For the second application the quantity generally used is about one liter per square meter of surface. The durability of such a tarred roadway surface depends naturally upon the quantity and character of the traffic which it is required to sustain. Motor carriages, with pneumatic tires, are the least trying to such a road; sharp-shod horses and heavy, iron-tired wagon wheels the worst.

Tar laid on a wet surface dried slowly and unevenly and in most, if not all, cases where the wheels of motor cars or other vehicles have picked up fragments of tar it has been because the freshly tarred road has been used too soon after the application of water underneath the tar coating has prevented its proper hardening. Tarred roadways are not recommended in this country for steep grades, where their smooth surface might be slippery and dangerous for horses, but in other locations they give to a well-built macadamized or hard-graveled road a clean, firm surface practically free from dust in dry, and mud in wet, weather. They are hard and smooth, with a gritty surface, which gives a firm foothold under all conditions of weather.

Another point of important advantage in France is that tarring protects the roadway from wear, especially the washing away of dust and loose fragments of stone by frequent rains, which under heavy traffic soon cuts the surface into inequalities that require attention and repair. The cleaning by machinery, which would soon abrade and ruin the macadamized road, has no effect on a tarred surface, which forms a matrix by which the gravel and pulverized stone are held firmly together and rendered water-proof. The system has not been long enough in use to furnish complete and conclusive statistics, but the cleanliness and comfort of tarred roads is fully conceded, and the protection of the macadamized surface from wear and tear effects an economy which goes far toward balancing their additional cost.

### Some Recent Experiments in England.

Consul Frank W. Mahin, of Nottingham, reports that all over England governing bodies are experimenting with dust layers.

Chloride of calcium is successfully used in Nottingham streets. In a western rural district oil tar has been applied with reported success. The first application cost \$73 per mile on a 6-yard road, and at the end of six weeks was said to be still perfectly effective. A second application would, it is estimated, cost \$34. The exponent of this dust remedy considers two dressings a summer sufficient—one at the beginning and the other six or seven weeks later. Still another recommended dust remedy is tar from gas works, declared to be both cheap and effective. Two coats a season applied on a road 8 yards wide is estimated to cost \$292 a mile. A prize is offered by interested parties, in the county of Kent, for the best machine to apply the tar, with a view of reducing the expense.

### Future Experiments to Be Made.

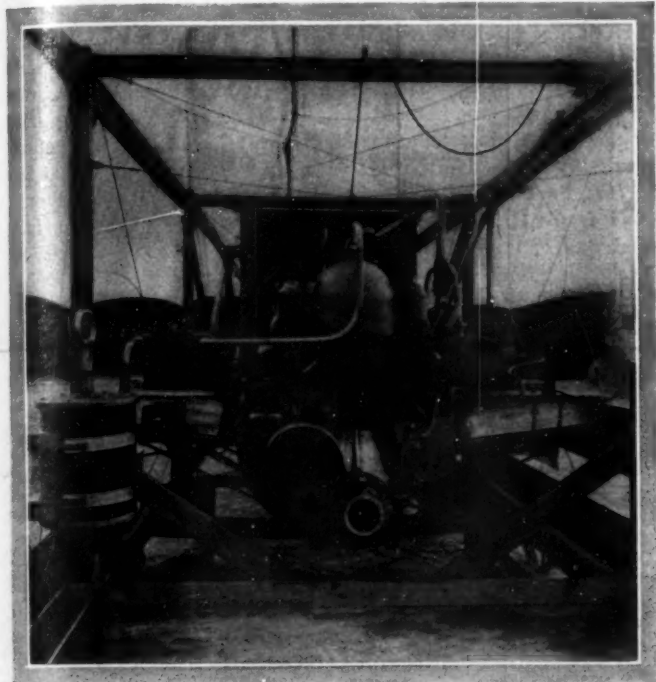
Consul W. C. Hamm, of Hull, reports that an important experiment is about to be carried out on three miles of the London-Portsmouth road by a joint roads and automobile committee.

The three miles will be divided into twelve quarter-mile portions, each to be treated with different materials. The first section will consist of the existing granite road, which has been recently repaired. The next length will be hand painted with tar, and it is expected this will not only lay the dust, but will also give the road a longer life. The third length will be treated with Taefelt, a patented material combining some of the properties of tar and asphalt. This will be laid about half an inch thick, and it is claimed for it that it will waterproof the road and provide a nonslippery surface absolutely free from dust. Another section will be treated with granite and Taefelt. The other sections are to be treated with various compositions, in all of which tar seems to play an important part. It is proposed to continue this experiment for seven years. Reports are to be issued quarterly, giving such detailed statements as to expense, as will give local authorities all over the kingdom the fullest opportunity of judging what the cost would be in their own districts.



## A NEW FRENCH STEERABLE BALLOON

PARIS, Oct. 19.—M. Ed. Sureouf, the well-known aeronaut, is the constructor of the new French steerable balloon shown in the illustration and bearing the title of *La Ville de Paris*. Its distinguishing feature is a series of eight compensating balloons at the stern, placed in pairs above, below, and on each side. Pure



70-HORSEPOWER ARGUS MOTOR WHICH DRIVES THE PROPELLER.

hydrogen is used for inflating. A very long platform is used, being only a little shorter than the main beam. At the forward end is a propeller driven by a 70-horsepower Argus motor—of German construction—running at 900 revolutions a minute; the propeller revolves at 180 revolutions. A Mors automatic starter is attached to the motor, and is placed on a platform immediately behind the engine. In addition there is a small De Dion motor for use in case of emergency. The double rudder carried at the rear consists of a light framework covered with canvas, and controls the upward and downward movement as well as right and left turns. Enough gasoline is carried in two tanks to suffice for a fourteen hours' journey. The balloon portion of the machine is admirably constructed, and in the opinion of experts is one of the finest pieces of balloon work ever seen in France. The mechanical portion, on the other hand, is very much open to criticism. Far too much dead weight is carried; no attempt appears to have been made to secure a saving in engine weight. With its two motors, its starting apparatus, its gasoline and water supply, as well as the necessary tools and fittings carried on the platform, there is a tremendous load for the balloon to carry through the air. At the present moment everything is ready for a trial, and had the weather been more favorable the first sail would have taken place to-day.

### ANNUAL MEETING OF THE AERO CLUB.

The annual meeting of the Aero Club of America will be held Monday evening, November 5, at the clubrooms of the Automobile Club of America, 753 Fifth avenue, New York City.

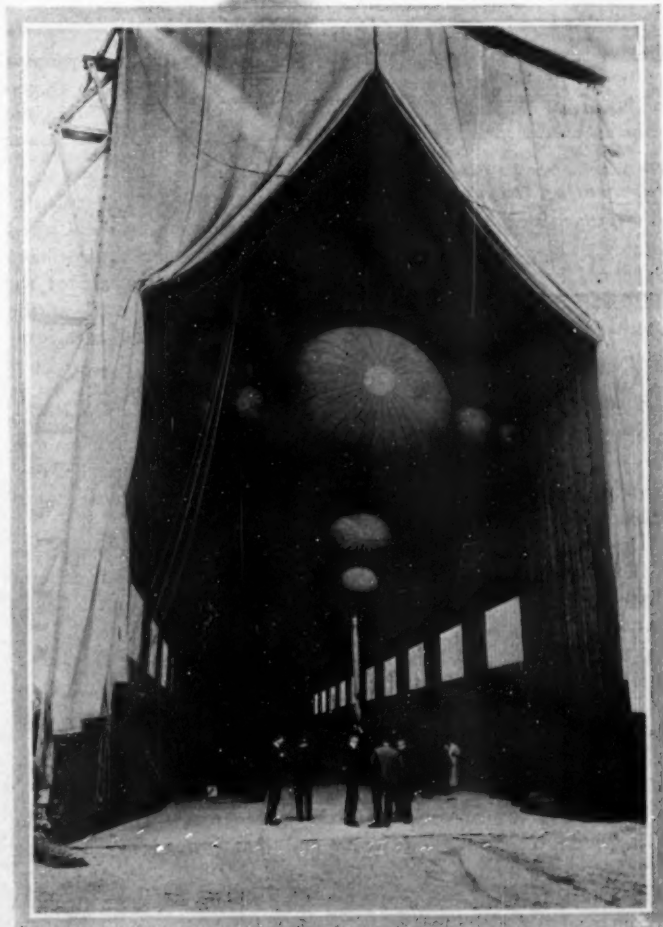
It is proposed to offer a cup to be known as the "Lahm Cup," in honor of Lieut. Frank P. Lahm's victory in the Gordon-Bennett Aerial Cup race, September 30, to be offered to contestants from recognized American aero clubs for the longest continuous balloon

trips made by them in America exceeding 647 kilometers. The cup to be retained by its winner until some other contestant exceeds his record.

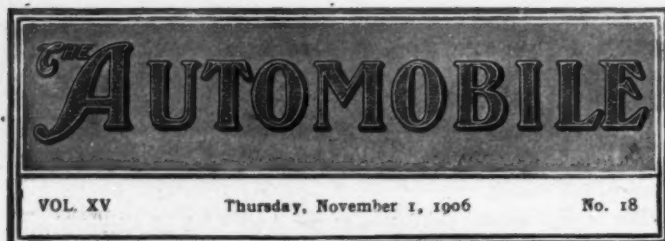
The second annual exhibition of the Aero Club of America will be held December 1 to 8 in Grand Central Palace, New York. About forty exhibitors have already signified their intention of exhibiting. The exhibit will include the *Santos-Dumont No. 9*, Roy Knabenshue's *Arrow*, Dr. Julian P. Thomas's airship, Leo Stevens's airship, balloons *Centauro*, *Orient*, *Nirvana*, *Grand Air*, *You and I*, *Sky-Lark*, *Initial*, *America*, balloon *United States* which Lieutenant Lahm used in the Gordon-Bennett; engine of Professor Langley's aeroplane; full-sized flying machines, both aeroplanes and flapping-wing machines; an aero-wagon, aerocycle, kite aeroplanes, kites, drachen balloon; models of airships and flying machines in actual operation; instruments, photographs, etc. A very good collection of light airship motors will be shown. Moving pictures of the Gordon-Bennett Aerial Cup race, Vanderbilt Cup race, English balloon races, etc., will be shown daily during the show. Papers will be read by scientists and inventors on the progress of the art and on technical subjects.

### AERO CLUB WILL GIVE CUP TO LAHM.

The Aero Club of America will present a silver cup to Lieut. Frank P. Lahm as an appreciation of his victory in the recent international balloon race. President Homer Hedge states that the cup will be a very artistic affair, the figure of a large balloon being the chief feature in the design. Since Lieutenant Lahm will not return to this country for some time, it is possible that the cup will be sent to him in Paris.



LA VILLE DE PARIS AT REST IN THE AERODROME.



**THE CLASS JOURNAL COMPANY,**  
Flatiron Building, Madison Square  
New York City

H. M. SWETLAND, President.

**EDITORIAL DEPARTMENT:**

A. G. BATCHELDER, Managing Editor  
R. F. KELSEY, Associate Editor      HOWARD GREENE, Assistant

**BUSINESS DEPARTMENT:**

A. B. SWETLAND, Business Manager  
L. R. SMITH      B. FRANK BARNETT  
W. I. RALPH, 1034 Old South Building, Boston, Mass.  
C. H. GURNETT, H. H. GILL, 625 Monadnock Block, Chicago, Ill.

Cable Address - - - - - Autoland, New York  
Long Distance Telephone - - - - - 300 Gramercy, New York

**SUBSCRIPTION RATES:**

United States, Canada and Mexico, - - - - - One Year, \$2.00  
Other Countries in Postal Union, - - - - - One Year, \$3.00  
To Subscribers—Do not send money by ordinary mail. Remit by Draft,  
Post-office or Express Money Order, or Register your letter.

**FOREIGN SUBSCRIPTION AGENTS:**

ENGLAND:—Iliffe & Sons, Limited, 3 St. Bride St., Ludgate Circus, London, E. C.  
FRANCE:—Boyveau & Chevillet, 22 Rue de la Banque, Paris.  
GERMANY:—A. Seydel, Mohrenstrasse 9, Berlin.

Copyright, 1906, by The Class Journal Company.  
Entered at New York, N. Y., as second-class matter.  
The Automobile is a consolidation of The Automobile (monthly) and the  
Motor Review (weekly).

Copies printed in 1905, - - - - -	730,000
" " This Issue, - - - - -	15,500
" " Since Jan. 1, - - - - -	650,000

**Remarkable Figures and  
Interesting Deductions.**

Elsewhere in this issue is a most interesting article on the truly extraordinary statistics of the horse-vehicle industry in the United States. This is believed to be the first time that these figures have appeared in any automobile periodical, but that they are of the deepest interest and significance to everyone interested in the mechanical vehicle is apparent upon the most casual consideration.

An annual production of over a million and a half horse vehicles—an average of one for every fifty-three people throughout the whole country, every year—seems almost unbelievable, but it is fully substantiated by the census figures, which are classified and sub-classified in a manner indicating the most painstaking and accurate compilation.

Doubtless many of these horse vehicles are of very cheap types—their average value is less than \$76—but it is to be remembered that there must be added to this at least one horse and a set of harness to make a complete road unit.

Possibly there may be some disagreement with Mr. Lougheed's conclusions concerning the comparative fields for commercial and for pleasure vehicles, but it is difficult to see any basis for such disagreement. And at that, the field for both is most evidently great enough—far greater than nine out of ten of us have any idea of.

There are many who have no hesitation in asserting that the industry is really in its infancy, and that instead of providing new highways for the automobile it soon will be a case of removing the horse from the present roads—which will be somewhat reconstructed for the motor-driven vehicle—and arranging otherwise for the horse and not for the automobile.

**The Promising Future of  
Aerial Navigation.**

Unquestionably following in the wake of the successful automobile comes the airship, presenting a problem upon which many inventive minds are now industriously at work. Ballooning is a pastime, pure and simple, and this form of aerial traveling is scarcely farther advanced than it was a score of years ago. To be carried about by the mere whim of the air currents may be a delightful pastime, but utterly impracticable in going from place to place on a fairly definite schedule, for this is what the airship must accomplish if it is to find a permanent standing in the transportation field, which demands first of all certainty of movement.

Decidedly promising was the recent flight of Santos-Dumont with his aeroplane, and this has caused a call for an early exposition of the craft brought forth by the Wright brothers, the two Americans who are credited with having nearly solved the puzzle of the air. The noted Brazilian, registering from Paris, confidently expresses himself as being on the verge of unqualified success, and it is to be hoped that his assertions are based on a good foundation. The motor which drives the automobile, in a more or less modified form, is destined to be the power which will direct the airship in its journeys through the trackless air. Thus it follows, as a natural sequence, that the man who drives an automobile is bound to be keenly interested in the motor-driven traveler which is destined to soar above the earth.

While the perfected airship will play its part in the progress of the age, that rôle will never interfere with its fellow-companion of the highways. Both will aid man in girdling this globe and lessen its circumference in time-saving journeys.



**The Glory of the Autumnal  
Touring Season.**

Indian Summer days are here, nature is redolent with a glorious plenitude of color. The automobilist who fails to take advantage of the brief transitory time when a dying Summer lingers, for at least a brief trip amid the many-colored falling leaves that carpet the country highways must indeed be dead to the still small voice of nature in her most wooing mood.

No other portion of the world is favored as is the American continent with Autumn weather. The soft light of its autumnal days has been the wonder of the European, and the tuneful muse has chanted its glories far and wide. Viewed from its practical side Autumn touring offers special advantages not to be derived at other seasons. First of all there is less dust on the country roads, owing to the fact that falling leaves form a blanket which smotherers to a great extent the rising particles. Again, the balmy air of Indian Summer is dry and has none of the sharp sting of early Spring days. Not only is the scenery of the declining Summer restful to the senses and tired nerves, but all that is best in nature is presented to the tourist in the ripened harvest that has been gathered, and the wealth of natural color that so charms the artistic sense and makes an ineffaceable impress on the memory. Take the advantage offered but once a year and get next to Nature's heart when it is filled to overflowing.



**ANNOUNCEMENT.**

The Class Journal Company, publishers of THE AUTOMOBILE, has sold outright to H. F. Donaldson the monthly technical publication known as *The Commercial Vehicle*, which it established early in the present year. The publication office of *The Commercial Vehicle* has been removed from the Flatiron Building to the Astor Theatre Building, 1535 Broadway, New York.

Mr. Donaldson was formerly the editor of THE AUTOMOBILE, but confined his efforts to its engineering department after *The Commercial Vehicle* was started. He is well and favorably known throughout the automobile world, and his writings bear the stamp of one who has a thorough knowledge of his subject. Mr. Donaldson's ability assures the success of the publication of which he is now the publisher and editor.



## LONG ISLAND MOTOR HIGHWAY.

Steady progress is being made toward the construction of the automobile road that is to stretch across Long Island, and the Monday meeting of the Plan and Scope Committee, held at the office of W. K. Vandervilt, Jr., in the Grand Central Depot, plainly indicated what is being accomplished.

It was decided that the road should be known as the "Long Island Motor Highway," and this name will be recommended by the committee to the Board of Directors for action at its meeting next week. Mr. Vanderbilt is also the choice for the presidency of the corporation, the financial plan for which calls for \$2,000,000 of stock, equally divided between preferred and common, and an issuance of \$500,000 of 4 per cent. twenty-five-year gold bonds of \$500 each.

Present at the Monday session, at which Mr. Vanderbilt presided, were Jefferson De Mont Thompson, chairman of the A. A. A. Racing Board; Ralph Peters, president of the Long Island Railroad; A. R. Pardington, ex-chairman of the A. A. A. Racing Board, and Dean Alvord, who reported that fifteen miles of the right-of-way had already been tendered without compensation. Mr. Thompson will attend to the subscriptions for stock.

Dave Hennen Morris, president of the Automobile Club of America, to whom had been referred the matter of looking into the necessity for legislation regarding the building of the highway, was unable to be present, but sent word that he had found no serious legal obstacle and supplied drafts of laws that are to be presented to the next Legislature. A half dozen possible routes are available, and it is the purpose of the Plan and Scope Committee to consult with the local authorities in Nassau and Suffolk counties concerning the construction of spur lines acting as feeders to the automobile highway and connecting the north and south shores of the island.

The committee also intends to take up with the authorities of the City of New York a widening of all the highways through Queens county, which will act as tributaries to the highway, and also to meet and join the present means of communication between the Borough of Brooklyn and Nassau county, which at the present time is far from satisfactory, and, in certain instances, really a disgrace to the city.

It is the desire of those interested in the Long Island Motorway to bring positive attention to the fact that the project is not the mere construction of a race course; in fact, it is exactly the contrary, for racing is simply an incident.

## NEW MEMBERS FOR A. A. C. OF N. J.

NEWARK, N. J., Oct. 30.—At a meeting of the Associated Automobile Clubs of New Jersey, held at the clubhouse of the New Jersey Automobile and Motor Club, two members were admitted, the Rutherford Motor Club and the Automobile Club of Union County. President F. R. Pratt presided, and those present included Secretary J. E. Gill, Treasurer Frank Eveland, J. H. Edwards, president of the Automobile Club of Hudson County, and George A. Post, president of the North Jersey Auto Club. The New Jersey state body of the A. A. A. is in a flourishing condition, has money in its treasury, and some excellent work for the benefit of members is being planned.

## ACCEPTANCES FOR THE CHICAGO SHOW.

Of the automobile exhibitors in the Chicago show, Manager S. A. Miles has received forty-one acceptances in the Coliseum, eleven in the Annex, thirty-six in the First Regiment Armory, and nine on the second floor of the Annex, a total of ninety-seven. All of the gallery of the Coliseum and all of the wall space of the second floor of the Coliseum Annex has been assigned to members of the Motor and Accessory Manufacturers' Association, of which ninety-three have accepted. In the Armory gallery twenty-eight of the thirty allotments have been taken.

## NEWCASTLE GETS MAXWELL PLANT.

NEWCASTLE, IND., Oct. 29.—Citizens of this city are jubilant over the announcement that the Maxwell-Briscoe Company has decided to locate its new plant in this city. This city was one of a number of Indiana cities that competed for the location of the plant. Excellent inducements were offered the company to locate here, and a committee of citizens worked unceasingly to bring about the result accomplished.

Work will be started on the factory buildings, which are to occupy fifteen acres of ground, at once, and it is expected that they will be ready for occupancy early in 1907. An idea of the size of the plant may be guessed at by the announcement that the output here will exceed that of the two factories now located at Pawtucket and Tarrytown. One of the interesting features of the factory will be a one-half-mile track, upon which cars may be tested as completed. The plant will employ from 1,000 to 1,200 men.

## THE TAXAMETER AUTO FOR NEW YORK CITY.

Paul Lacroix, the new Renault representative in this country, commenting upon the auto taximeter cab in Paris, says:

"I believe there is no reason why the Paris system should not obtain here in New York, and I believe the company that gives New York a similar service of low-priced automobiles will pay enormous dividends. Topographically, Paris and New York are very different. While the Place de l'Opera in Paris is the center of the busy life of the capital, actually the central point of Paris is about at the Church of the Notre Dame. From this point the fortifications in any exterior part of Paris are about equidistant. New York, on the contrary, is elongated and narrow, but I have not the least doubt but that this problem can be worked out so that New Yorkers can have the benefit of cheap service, resulting profitably to its originators as well as satisfactory to the public. At the rates quoted in Paris the cars earn net about \$9 a day."

## ECONOMY RUN DATES: NOVEMBER 14, 15, 16.

November 14, 15, and 16 are announced as the dates for the several times postponed annual Economy Test of the New York Motor Club. Announcement concerning rules and the issuing of entry blanks will be made this week. The club's new headquarters in the Reisenweber Building, Fifty-eighth street and Columbus Circle, will be opened to-night with a smoker.

## E. R. THOMAS BUYS A HOTCHKISS RACER.

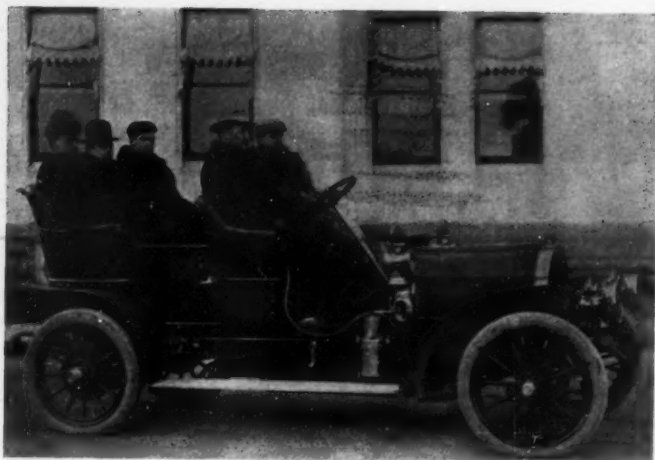
E. Russell Thomas, the well-known amateur driver of high-powered cars, has bought the 120-horsepower Hotchkiss racer which Elliott F. Shepard drove in the Vanderbilt Cup race. It is among the possibilities that Mr. Thomas will be a participant in the Florida meet. He was a prominent figure and a good winner in the 1905 tournament.

## MOTOR BOATS AT PALM BEACH IN JANUARY.

The Florida Power Boat Association has decided to give its annual speed carnival and parade on Lake Worth, Palm Beach, January 29-February 1. An endurance race from St. Augustine to Palm Beach, a distance of 300 miles, is being considered. The carnival feature will be conducted on a grand scale.

## GRAND PRIX TO BE HELD AGAIN.

PARIS, Oct. 29.—The Automobile Club of France has definitely decided to hold a Grand Prix in 1907, but the conditions are yet to be decided upon. It is stated that Brasier will not go in for racing next year.



1907 COLUMBIA, 24-28 HORSEPOWER TOURING CAR.

Messrs. Maxim, Henry, Risley, L'Hommedieu and Herrington, of the Electric Vehicle Company, ready to start for a test trip.

### NEW MODEL COLUMBIA GASOLINE CAR.

There will be a new model Columbia car for 1907, a 24-28-horsepower touring car that will be a successor to the 18-horsepower car that made such a good record in the Glidden tour—not a point lost. The new car will be larger in every way than the "Little Columbia," as it was called. The wheelbase will be longer, the tonneau more roomy, the seats wider and more comfortable, and the entire car more luxurious and comfortable in every way. In the power plant the water areas in the cooling system are considerably larger and the arrangement of the piping has been changed in order to give the magneto more room; the circulating pump is larger than in the 18-horsepower car, a number of improvements have been made in the mechanical lubricating system and several grease cups have been rendered unnecessary and abolished. The magneto is still of the low-tension type, generating current for the make and break ignition system. The change speed mechanism is of the selective sliding gear type, driving the live rear axle through propeller shaft and bevel gears.

### THE 1907 POPE-WAVERLEY RUNABOUT.

Among the first of the 1907 Pope-Waverley models to make their appearance is a runabout of pleasing design and attractive appearance. The new model, which is known as Model No. 69 in the 1907 catalogue, has a heavier motor and battery equipment than the Model No. 36 speed wagon, and has a more attractive appearance, the finish being finer.

The length is 6 feet 9 inches and the wheel base 6 feet. The car can attain a speed of from 5 to 17 miles per hour, the motor and battery equipment providing for long mileage.



MODEL 69 POPE-WAVERLEY RUNABOUT FOR 1907.

There is one motor of double-overload capacity. It is of a special Pope-Waverley design, one of the newest designs originating in the factory. There is one electric and two foot-brakes. The gearing is the noiseless herringbone, which runs in oil and is protected by dust-proof cases.

### "PUSHMOBILE" RACE AT MINEOLA.

MINEOLA, Oct. 27.—The Robert Ray Allen Cup race for pushmobiles has been run and won. This afternoon ten enthusiastic drivers faced the starter and were sent on their journey amid the cheers of 300 spectators. The youngsters whose ages ranged from five to ten years exhibited so much earnest rivalry that it became contagious, and old men and staid county officials found themselves with hats waving, cheering on their favorites. The donor of the cup, Master Robert Ray Allen, came to grief in the second lap, when his steering gear broke on a sharp turn, causing his mobile to upset. The little fellow was thrown some feet, but luckily was unhurt. Eddie Shade, aged six, won the race with machine No. 7; Charlie Kelleher, machine No. 16, was second, and Willie Halloran, machine No. 1, was third. A large cup has been offered by George B. Stoddard, of Oyster Bay, to be raced for next Saturday, in an event open to all Nassau County.



AN AEROCAR RUNABOUT IN THE BERKSHIRE HILLS.

The car is one of the new 1907 Model C rapid travel touring cars and shows the party in the dense woods of the Berkshires in Massachusetts.

### THE DIAMOND RUBBER CO. ANNOUNCEMENT.

An announcement is made this week by the Diamond Rubber Company concerning its 1907 policy. Briefly stated, the plan of the Diamond tire manufacturers is to put it "up to" the user and the trade as to whether price or quality shall rule in the tire end of the automobile industry, and the public will have the season in which to decide. To resist and put aside all temptations offered by orders to be had only on a competitive price basis is meanwhile the Diamond decision, and "stand pat" on quality the slogan. In the matter of quality, the Diamond company states with emphasis that it has succeeded in developing a tire much better than either its 1905 or 1906 production, and particular stress is placed on the merits of the 1907 Diamond flat tread type in the well-known wrapped tread construction.

### NEWBURGH CO. WILL MAKE TWO MODELS.

NEWBURGH, N. Y., Oct. 29.—The Abenbroth & Root Manufacturing Company intend to put out two 1907 models. One will be a 45-horsepower touring car, with 124-inch wheelbase, commodious tonneau, and seven passengers will be comfortably carried. The runabout will have practically the same wheelbase and also be of the same horsepower. The company intends to show its models at the Grand Central Palace show.



## THE MAXWELL'S RECORD NON-STOP RUN

By C. F. MARDEN.

BOSTON, Oct. 30.—At 3:05 o'clock this morning the two-cylinder 20-horsepower Maxwell completed its 2,500 mile non-stop run at Worcester, having been on the road 139 hours and completing the required distance twenty-nine hours ahead of the schedule. The observers utilized on the last trips of the car included President L. R. Speare, of the Bay State Automobile Association; President J. P. Coughlin, of the Worcester Automobile Club, and Charles J. Glidden, the round-the-world tourist. It is the present intention to increase the mileage to about 2,800 miles and conclude with a trip to New York City, which would secure a mileage of 3,000 miles or more. C. W. Kelsey will probably drive the car to New York.

Probably this run is the hardest test ever planned for a small car. It was begun in this city Wednesday morning, October 24, and the 2,500 miles were to be completed within seven days. The test was the result of a wager between F. J. Tyler, of the Maxwell-Briscoe Boston company, and W. H. Doble, of Boston, an enthusiastic automobilist. The two gentlemen some days ago were engaged in a discussion concerning the running and staying qualities of the Maxwell. Mr. Tyler asserted that his two-cylinder touring car could make 2,500 miles inside a week without stopping the motor, and offered to back his faith in the car with money. Mr. Doble was game, and as a result \$1,000 was posted, \$500 by each.

Plans were made to run the test over the roads between this city and Worcester, the round trip distance being 88½ miles, through Weston, Sudbury, and Marlboro. The running time was set at five hours for a trip so that the machine would not break any of the speed laws or ordinances, and the Bay State Automobile Association clubhouse on Dartmouth street, Boston, and the club quarters of the Worcester Automobile Club on Front street, Worcester, were the termini selected. It was agreed that the car should be checked at both places, and that observers should accompany it on every trip and make a record of its performances.

### The First Trip Between Cities.

The two drivers were Lucius S. Tyler and Ralph Coburn. Each was allowed a mechanic, so that with observer the car would have at least three persons all the time. The first trip was begun Wednesday morning at 8 o'clock with Lucius S. Tyler at the wheel, R. S. Davis as mechanic, and two Boston newspaper men as observers. The weather was fine, and, despite the recent rains, the roads were found to be in excellent condition. On the first half of the journey the car exceeded its schedule, making the trip in 2h. 15m. On the return the car reached the Bay State clubhouse at 12:20 o'clock, having completed the round trip in 4h. 20m. Ralph Coburn then took the wheel and the car began the second trip.

During the first twenty-four hours of running the car covered 440½ miles, or more than one-sixth the entire journey, and had gained one lap on the schedule, having made five trips between Boston and Worcester. This put it almost ninety miles to the good in case of delay later on. After the first two trips it was decided not to change drivers every trip, but to let one man handle the car two consecutive round trips.

### Some Rain Encountered on Thursday.

Thursday morning, about 8 o'clock, when the car was starting on its sixth journey, there was a heavy shower and some time was lost at the garage securing oilskins and rubber blankets. The roads were also muddy, making careful driving necessary. By the time the return journey was commenced, however, the rain had stopped and the roads dried out and the car finished 524 miles at 1:30 o'clock in excellent condition, the motor having run 29½ hours continuously. All Thursday afternoon and during the night

the motor ran without a falter and reeled off mile after mile, the bright moon making driving a pleasure.

Friday morning the car completed ten round trips at 8:45 o'clock. It had then netted 875 miles and was two trips ahead of the schedule. As trip after trip was completed and the motor continued to run steadily, some of the skeptical became interested. During Thursday night and Friday morning representatives of other makes of cars acted as observers. The eleventh trip was finished Friday afternoon at 1:10 o'clock. During the twelfth lap, which was completed at 5:49 Friday afternoon, the car passed the 1,000-mile mark, which has usually been the limit of non-stop tests. The motor was then running as smoothly as at the beginning, and the only change that had been made was the shifting of one spark plug. Friday night the moon was bright



MAXWELL CAR IN 3,000-MILE NON-STOP TEST.

F. J. Tyler (at the wheel) and W. H. Doble, parties to the \$1,000 wager, are on the front seat; Ralph Coburn, one of the drivers of the car, and Secretary James Fortescue of the Bay State Automobile Association are on the rear seat.

and the air clear and cool, and the car reeled off three laps in 4h. 38m., 4h. 46m., and 4h. 38m. respectively.

### One Thousand Miles for \$15.35.

In the course of the early morning trip Saturday the car completed 1,250 miles, or half the task assigned to it. At 8:04 o'clock Saturday morning the car finished its fifteenth trip, and had 1,314 miles to its credit. This was about 200 miles ahead of the schedule, as it had been possible to make five trips every twenty-four hours instead of four, as was the original plan. The motor had then been running steadily for more than seventy-two hours.

Saturday afternoon and evening the Maxwell kept on, the motor humming with the purr and rhythm that the automobilist likes to hear. At 10:26 o'clock Saturday night the nineteenth trip was finished, and 1,576½ miles, or more than three-fifths of the distance, were behind. With less than 1,000 miles to go, the car seemed good for that distance and more. By that time the statisticians had gotten to work, and they had figured that in the first 1,000 miles the total cost of operation was only \$15.35. Of this amount \$12.40 was for 62 gallons of gasoline; \$1.45 for 7¼ quarts of oil, and \$1.50 for one spark plug. International tires were used, and had not been touched since the start.

### The Only Threat of Failure.

The first threat of failure in the test came during the early morning hours Sunday. The car had been going along nicely,

finishing the twentieth trip at 3:26 o'clock Sunday morning in fine shape, the bright moon aiding the driver materially. At 3:32 o'clock A. M. the twenty-first trip was started and the journey to Worcester was accomplished without a hitch. On the way back, however, in Northboro, just about sunrise, one of the tires was punctured. This necessitated a delay of seventeen minutes. With the tire repaired, all went well until the car was nearing Boston. In the vicinity of Lake street, Newton, the motor began to skip. Lucius Tyler was driving, with Davis as mechanic. Shifting the batteries did not remedy the trouble, and the car was stopped. Before the car was at a standstill Davis was out and had the bonnet off. A glance at the commutator located the trouble, for a spring had broken. With only a space of four inches in which to work between the commutator and the fly-wheel, Tyler and Davis kept one point in contact, thus keeping one cylinder in operation, and at the same time put in a new spring. The operation took about five minutes, and though the motor was perilously near dying, it was not allowed to do so, and when the new spring was in the motor started off merrily and the trip was finished at 8:43 o'clock A. M.

On the two day trips Sunday many automobilists escorted the car in and out of Boston and Worcester as it made its circuits. The day was beautiful and the roads were dustless because of a brief shower of the night. At 8:48 o'clock Sunday morning the car began its twenty-second journey, and finished at 1:30 o'clock in the afternoon. It was off again immediately, and at 6:36 o'clock P. M. had made the twenty-third trip and had covered 1,925 miles, the motor having been in continuous operation for more than 106 hours, the average pace being 18.16 miles an hour. At that pace it was figured that the car would complete the 2,500 miles at an early hour Tuesday morning.

#### COMPLETES THE 3,000-MILE RUN.

NEW YORK, Oct. 31.—After increasing its mileage to 2,633 on the completion of its thirtieth trip between Worcester and Boston, the non-stop Maxwell, with Sales Manager Kelsey at the wheel, started for New York at 10:25 o'clock A. M. Tuesday. The metropolis was reached at 3 o'clock this morning, and after a rest of a few hours Mr. Kelsey completed the remaining seventy-four miles in order to make the exact non-stop mark 3,000 miles.

This distance was covered over city streets, and the car finally halted at the clubrooms of the New York Motor Club, corner of Fifty-eighth street and Seventh avenue, shortly after 3 P. M. Here the motor was stopped after a seven-day period of activity, miles in excess of anything ever before attempted. The total cost of operation for 2,500 miles of the test was \$41.45.

#### GEORGE LOWE THE AEROCAR NEW ENGLANDER.

BOSTON, Oct. 29.—Arrangements have just been completed whereby the newly organized George H. Lowe Company will represent the Aerocar Company, of Detroit, in the New England states for the coming season. Maine, New Hampshire, Vermont, Rhode Island and Massachusetts will be covered from this center. One hundred of these big touring cars and high-powered touring runabouts have been contracted for, and first shipments will go forward at once. The location of the new showrooms has not been decided as yet, but it is announced that options have been secured on three of the very best sites in Boston.

#### CARRICO ENGINES FOR LOGAN RUNABOUTS.

INDIANAPOLIS, IND., Oct. 29.—An order for 100 engines, which it is expected will be duplicated before the end of the 1907 season, has been received by the Speed Changing Pulley Company, of this city, from the Logan Construction Co., of Chillicothe, O.

The engines, which are of the Carrico, air-cooled, 20-horsepower type, are to be used in a new runabout that the Logan Construction Company is about to bring out. The runabout will be built with the Hassler transmission.

#### RULING ON AUTOS WITH EXPORTED PARTS.

WASHINGTON, D. C., Oct. 29.—An important decision has been made by the Treasury Department to the effect that on the exportation of automobiles manufactured with the use of imported castings, spark plugs, batteries, contact boxes, bearings, etc., a drawback will be allowed equal in amount to the duties paid on the imported material so used, less the legal deduction of one per cent.

The regulations prescribe that the preliminary entry must show the number of automobiles exported, the marks and numbers thereof, and the parts upon which drawback is claimed. The drawback entry must show, with respect to the castings, the number and name, the imported weight and the finished weight, together with the waste incurred in the manufacture, with the value thereof. The drawback entry must further show the number of spark plugs, spark coils, spark gaps, batteries, springs, contact boxes, bearings, etc., used in the exported automobiles, describing the several parts as they are described in the import invoice or invoices; and, further, that the exported automobiles were made of imported materials, and in the manner set forth in the manufacturers' sworn statement now on file.

In liquidation, the weight of the imported iron and steel castings, which may be taken as basis for the allowance of drawback, may equal that declared in the drawback entry, provided it shall in no case exceed the weight specified in the manufacturers' sworn statement. The number of imported spark plugs, batteries, coils, contact boxes, bearings, etc., which may be taken as bases for the allowance of drawback may equal the quantities declared in the drawback entry, provided it shall not exceed the quantities specified in the manufacturers' sworn statement, heretofore referred to.

These are the most extensive drawback regulations the Treasury Department has ever issued in regard to exported automobiles, and they will doubtless prove of much interest to the trade at large.

#### S. & M. SIMPLEX CARS FOR TONAPAH.

The Smith & Mabley Manufacturing Company is preparing two somewhat remarkable S. & M. Simplex cars, specially built for use in the sandy deserts and roadless territory in the neighborhood of Tonapah, Nev. The agent from Nevada some time ago visited New York and said that he had been having great difficulty in securing cars which could be used by a mining company in Tonapah.

"I am afraid it is almost a hopeless job," he said. "We have tried several cars, but none of them seems to be able to stand the strain of travel through shifting sands traversing a country where there are practically no roads and which abounds in low sage-brush."

The agent was taken for a demonstration in a Simplex car, and after running about thirty miles out of New York the demonstrator turned into a large field which was bumpy and full of bushes from a foot to two feet in height. The car was driven for about four and a half miles in and around this and similar fields without stopping, and at the conclusion of the demonstration the agent was fully convinced that the car was what he was searching for.

#### JACKSON'S OUTPUT FOR NEXT YEAR.

JACKSON, MICH., Oct. 29.—The Jackson Automobile Company, with two new factory buildings, including a forge shop, is preparing for an output of 1,300 automobiles for the present year, the selling value of the product being over \$1,250,000. As indicating the prosperity of this company, orders for 1,213 machines have already been booked. The company will have the machinery running in the new factories, which are additions to the present plant, by November 1. The new buildings are equipped with the most modern facilities for handling the work of construction rapidly and well, and will employ a large additional force of skilled workmen.





NORCROSS &amp; CAMERON'S GARAGE SPRINGFIELD, MASS.

### A MODEL NEW ENGLAND GARAGE.

In Springfield, Mass., a new garage has been opened that is the pride of the owners as well as of the local automobilists. The new Norcross & Cameron garage is located on West Bridge street, and is of fireproof construction throughout, steel and concrete being the materials employed. Springfield is on the main automobile route between New York and Boston, and is a stopping place for nearly all who make the trip, so that really good garage accommodation is a necessity. The Norcross & Cameron garage is fitted up with every comfort and convenience for patrons and every facility for storing and repairing cars. Handsomely furnished rooms are provided for men and for women, and there tourists can wait in comfort while their cars are receiving attention in the shops, where a complete outfit of tools and machinery, driven by electric motors, is installed. When cars are left at the garage for any length of time the equipment of lamps, tools, and so on, is removed and locked in a special box in the presence of the owner or chauffeur, and a list made so that there will be no danger of loss on one hand, and no possibility of mistake regarding the items of equipment on the other. Cars are hoisted from one floor to another by a huge elevator of the modern type, and the entrances are of ample size—the main entrance, for example, is 16 feet wide.

In addition to repair and storage work, the company will handle the Rambler, Ford and Corbin cars, a special department having been fitted up for this branch of the business.

### Worcester to Have a New Fireproof Garage.

Ground has been broken for the erection of an up-to-date garage and salesroom in Worcester, Mass., by the Pilot Garage and Supply Company of that place. This company has secured the agency for the full line of Pope cars—Pope-Toledo, Pope-Hartford, Pope-Tribune and Pope-Waverley—and the handling of these machines will form an important part of the business. The garage will have all the latest improvements, will be absolutely fireproof, of steel, brick, and glass, will have a storage capacity for seventy-five machines, and will have luxurious rooms for the use of patrons, both men and women. A large stock of supplies of all kinds will be carried constantly.

### Buick Company's New Garage at Flint, Mich.

The Buick Motor Company, of Flint, Mich., which recently moved to that place from Jackson, is having plans made for a large and thoroughly modern building to be used as a garage. The repair department will be equipped with the machinery and tools necessary for automobile work of all kinds, and there will

be every comfort and convenience for patrons. The building will be on Detroit street; it is expected that the work of construction will be commenced in the spring as soon as weather conditions will permit, and will be rushed so as to permit occupancy as soon thereafter as possible.

### Six-Story Garage for White Company in Boston.

Arrangements have been practically completed for the erection of a large garage on Newbury street, Boston, for the White Sewing Machine Company. A parcel of land has been purchased and plans for the building have been submitted. The frontage will be about sixty-five feet and the building will be located between Massachusetts avenue and Hereford street; it will be six stories high and will be used exclusively for the accommodation of automobiles, which will be stored and repaired.

### QUAKER CITY TRADE HAPPENINGS.

PHILADELPHIA, Oct. 29.—Another foreign car has made its appearance here. This time it is the Renault, the local agency for which has been captured by William E. Walters, who, pending the location of suitable quarters somewhere along "Automobile Row," will transact business through a temporary office at 710 Girard Trust Building.

On November 1 the building recently secured by the Autocar Company, of Ardmore, at 249 North Broad street, in the heart of "the row," will pass into its possession, and at 7 A.M. a big force of workmen will be thrown into the ancient edifice. The contractor in charge of the work is under bonds to have the building ready for occupancy on January 1.

Harry B. Remington has been appointed manager of the Hump Motor Car Company, which recently took on the local agency for the Aerocar.

The Eastern Automobile Company, 326-338 North Broad street, will handle the Lozier here during the coming year. This concern also represents the Stevens-Duryea in Philadelphia.

One probable result of the races to be held at Point Breeze on Saturday, November 10, will be the formation of a new organization, the object of which will be the more frequent exploitation of the motor car locally through the medium of race meets, hill climbs, endurance and economy tests, etc. It is felt, especially among the tradesmen, that the local clubs now in existence are designed for social purposes, and that when some competitive event is scheduled the tradesmen are called upon to do a great portion of the work. It is argued that with such an association in active working order the promotion of race meets and tests will be so systematized as to require the expenditure of but little time on the part of any one man or set of men.



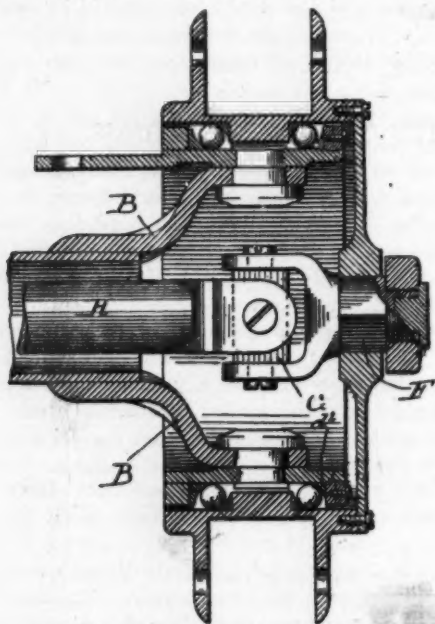
MAIN FLOOR OF NORCROSS &amp; CAMERON'S GARAGE.

## Patents

### Driving and Steering Hub.

No. 833,407. Frank H. Morse, of Rockford, Illinois.

This invention relates to a hub for a wheel for simultaneously driving and steering. The hub is made large to contain the arms *B B* carrying the steering pivots, the wheel running on ball bearings on the ex-



MORSE'S DRIVING AND STEERING HUB.

terior of the hub casing. Driving power is transmitted through shaft *H* and universal joint *G* to the squared stub *F* fitting into a square hole in the center of the end wall of the hub casing of the wheel, as shown. The axes of the steering pivot and of the pins of the universal joint all lie in the same vertical plane so that the wheel can turn on its pivots and at the same time be rotated by the driving shaft.

### Detachable Tire and Rim.

No. 833,230. Hermann Lemp, of Lynn, Mich.

This is a special rim for the Dunlop form of tire. The rim has rolled flanges on both sides, but one flange is cut away for about 1-5 of the circumference of the rim, and a removable section inserted to complete it.

### Steering Check.

No. 833,230. Herman Lemp, of Lynn, Mass. Assignor to the General Electric Company, of New York.

The check or lock proper consists of two pistons working in separate cylinders filled with oil or other suitable liquid, the cylinders being connected by passages which may be opened or closed at will by a balanced valve. The valve is manually operated by squeezing the divided steering wheel

so as to bring the lower portion up against the main portion, the movement being communicated to the valve by a vertical rod passing through the steering column. The two pistons are connected by pivoted connecting rods to opposite ends of a yoke, and the yoke is rigidly attached to a shaft which passes through the wall of the check casing and carries rigidly attached to its outer end the hub of a gear segment. This segment carries the arm from which the steering motion is transmitted to the front wheels through the usual rods and knuckles, and is itself rocked by a pinion carried by the lower end of the steering column. When the valve is closed none of the liquid can pass from one cylinder to the other, and so the pistons are immovable, and as long as the pistons are locked the entire steering gear is of course immovable. By pressing up the lower part of the hand wheel, however, the valve is opened and the liquid permitted to flow and the pistons to move, unlocking the steering gear and allowing it to be turned by the hand wheel. By only partly opening the valve only a slow movement is permitted, while a free swing may be given if the passages are fully open and allow a free passage of the liquid. In a modification of the device a slight preliminary motion of the hand wheel opens the

valve, the action being automatic. In the arrangement shown the action is not automatic, but there is no lost motion due to the steering check.

### Sectional Muffler.

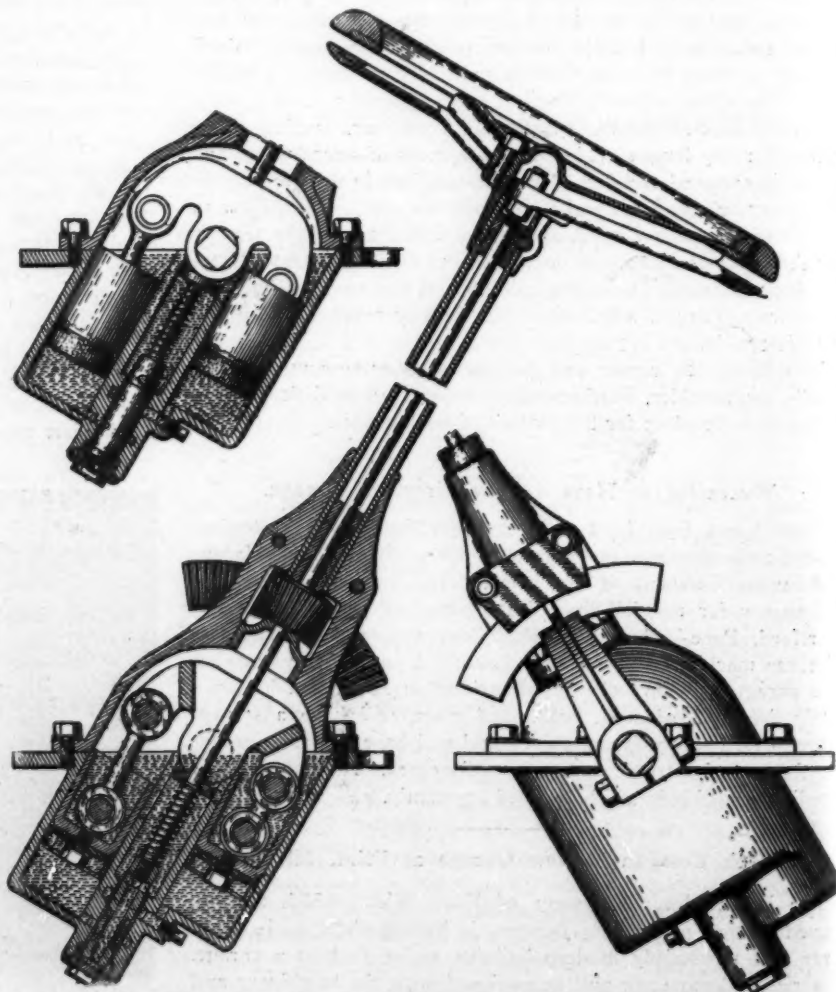
No. 833,241. H. S. Powell, of Clinton, N. Y.

This muffler is built up of a series of cup-shaped sections in the form of short trun-



POWELL'S SECTIONAL MUFFLER.

cated cones, the bottom of one cup just entering the top of the next. Long rods passing through the entire series hold the sections in place. A circle of small holes is drilled in the bottom of each cup for the passage of the gases. The open end of the last cup is closed by a cover having a threaded opening to receive the exhaust pipe end. The inventor claims that vibration is obviated by the nesting of the cups and that expansion and contraction will have no deleterious effects.



LEMP'S HYDRAULIC STEERING CHECK WITH MANUALLY OPERATED VALVE.



## NEWS AND TRADE MISCELLANY.

The Reo Motor Car Company, Lansing, Mich., is paying its half-mile testing track in the vicinity of its factory, brick being considered the most serviceable.

The Whitlock Coil Pipe Company of Elmwood, Conn., has completed three new factory buildings as an addition to the plant. One building will be used for making automobile radiators, one for coil work, and one for "big benders," or large coil pipe work.

A new drop forge shop has been added to the Pope Manufacturing Company's plant at Hartford, Conn., 60x80 feet in dimensions. This addition was necessitated by the heavy increase in business during the current year. The new shop will be equipped almost entirely with new machinery.

Finding its present quarters at Broadway and Fiftieth street, New York, inadequate for its growing business, the Rainier Company has leased the three-story and basement building at 235-237 West Fiftieth street, for a supplementary garage, which will afford storage for about 300 cars in all.

Favry's Automobile Designing School, 416 Broadway, New York City, is one of the latest institutions to supply automobile education to those seeking it. The Favry school is named after its principal instructor, who has had a long experience abroad before coming to this country. A correspondence course is also available to those unable to attend in person.

In the Vanderbilt Cup race the three Fiats, the two Italas, and the Christie car were lubricated by Vacuum mobiloil. Dr. Stoss, the winner of the Herkomer tour in Germany, is also a user of the Vacuum product. He states that he is particularly pleased to notice that the oil, even when lubricating the machine very much, causes little smoke.

Manager L. J. Ollier of the Chicago store of R. M. Owen & Co., agents for the Reo and Premier, has decided to permanently locate the store at 1344 Michigan avenue, that city, which is now occupied by the Packard agency. The latter will vacate the store as soon as its new quarters are completed, and in the meantime R. M. Owen & Co. are temporarily located at 1404 Michigan avenue.

The city of Cleveland recently passed an ordinance requiring all cars of the Cleveland Electric Railway Company to carry a jack as part of the regular equipment. The order was awarded to the Duff Manufacturing Company, of Allegheny, Pa., exclusive manufacturers of the Barrett Jack. Every car of the Pittsburgh Railway Company is also equipped with a Barrett Jack. No doubt this plan will be adopted eventually by the railway companies of many large cities.

After twelve months spent with an Autocar in Italy, France, and England, R. Conroy Vance, of Boston, has just returned to this country. Mr. Vance wrote to a friend in New York as follows: "I was fortunate in having no accidents in the entire twelve months of traveling. I think it speaks well for American tires also that in the whole time, touring many thousands of miles, I had not a single puncture. I spent about five months traveling about the Riviera, then ran my car up to Paris—about 640 miles—in four days, stopping in Valence for half a day, and in other places.

In the Alps my Autocar took me up a 5,000-foot direct mountain climb on the second speed, leaving a big French car far behind. From Paris I went to England, where I spent about four months touring the Southern countries."

This recent interesting experience of a New Jersey autoist emphasizes the ability of the air-cooled motor to perform unusual work: "My father owns a car equipped with a limousine body, and some weeks ago he had the misfortune to run into a tree at Long Branch, and phoned asking if I would pull his wrecked car home, a distance of 86.4 miles. His car weighs 4,200 pounds, about double the weight of my Corbin. We left Long Branch about 10 o'clock at night and had the car safely in Rockaway at 4 o'clock in the morning. The Corbin pulled the big car up hill and through the sand without the least difficulty and without a suspicion of overheating. A good performance for an air-cooled car, considering that much of the time it was pulling on the second and low gear."

R. E. Dietz Company, New York, announces: "For 1907 we will discontinue our present styles of Peerless and bullet shaped oil sidelamps and will continue our Dainty side, Orient, and Regal lamps in the flat back pattern only (made on the original cold blast principle), which we believe will be most popular this season. We will also continue our Dainty tail-lamp and No. 2 tail-lamp. All of the above, of course, will be of improved design. In addition to the above we have added our Sterling lamp, square type, particularly adapted for limousines and landaulets, and also our Royal lamps for use on heavy cars. We will continue our present barrel type gas headlights and searchlights, and have added to this line our Imperial lamp, a parabolens light. We have discontinued our present pattern of generators and will place on the market our No. 5 and No. 6 Handy generators, improved, holding two and five pounds carbide, respectively."

## NEW AGENCIES ESTABLISHED.

Recently appointed Haynes agents for New England are the Miller Garage Company, Bridgeport, Conn., and the Miner Garage Company, Hartford, Conn.

J. W. Mason, one of the best known automobilists of Newark, N. J., will enter the local trade in that city, November 1. He has leased the garage and store at 283-285 Halsey street, and will have the Newark agency for the Maxwell and Stoddard-Dayton lines.

H. L. Keats Auto Company, Portland, Ore., has taken the agency for the Buick, Thomas, and the "Thomas Jr.," the latter the product of the E. R. Thomas Detroit company. The Keats Company will also retain the agency for the Olds, Pope-Toledo, and Franklin, making its line a very strong one.

The Eastern Auto Company, of Philadelphia, has taken the agency for the Lozier cars in Philadelphia and vicinity. The San Francisco agency for the Lozier has been placed with the Lozier Auto Agency, a new concern, managed by a well-known man in the San Francisco trade, Ben I. Bill. Frank P. Libbey, of Salt Lake City, is another new Lozier agent who will handle the car the coming season.

The Pope Automobile Company of Washington has been formed to take over the

automobile business of the Washington branch of the Pope Mfg. Co., which was discontinued last week. The new company has been granted a charter under District laws and embarks in business with a capital of \$25,000. The following have been elected officers of the new concern: C. M. Campbell, president; C. E. Wood, vice-president; G. W. White, treasurer; R. G. Donaldson, secretary; C. Royce Hough, general manager. The new company will handle the full Pope line, and will have quarters in 817-19 Fourteenth street, which were occupied by the Pope Mfg. Co. Mr. Hough, who organized the company, was formerly manager of the Pope branch.

## PERSONAL TRADE MENTION.

Arthur N. Jervis, the well known writer on automobile topics, has been appointed press agent for the Madison Square Garden Show in January. The ability of Mr. Jervis is well known, and the selection is generally satisfactory.

Dr. John A. Hawkins, who was responsible for the organization of the Hiland Automobile Company of Pittsburg, Pa., has sold his interest, though it is understood to be his intention again to become connected with the trade.

A. L. Menges, formerly designer for the Harrison Automobile Company, of Grand Rapids, Mich., and inventor of the self-starting device used on Harrison cars, has left the employ of the company and embarked in business for himself at Grand Rapids.

T. F. Randolph, formerly chief enigneer of the Jeanesville Iron Works of Hazeltown, Pa., is the new superintendent of the Dragon Automobile Company of Detroit, Mich. The first Dragon cars, which will have a French appearance, will be ready in about two weeks.

J. Stewart Smith has become Eastern sales manager for the Electric Rubber Company, of Rutherford, N. J., makers of the Panther tires, and has opened sales-rooms at 253 West 47th street, New York City. Mr. Smith was formerly with the Continental Caoutchouc Company.

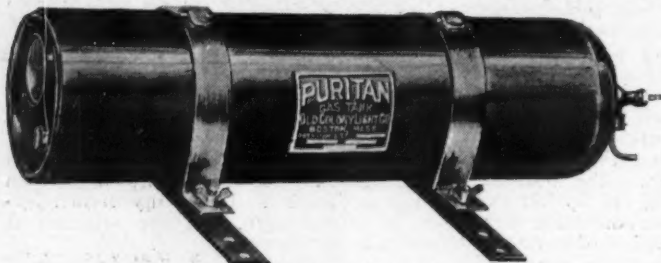
Commandant A. Krebs, inventor of the Krebs carbureter and general manager of the Panhard & Levassor Company, arrived in New York City last Saturday, to remain some time for the purpose of studying the American trade generally. M. Krebs is also much interested in aerial navigation, in the future of which he has much confidence.

H. M. Allison, who for several years has been one of the active department heads of the Packard Motor Car Company, and who, recently, as manager of the commercial vehicle department, has given special attention to the development of traffic vehicles, has severed his connection with the parent Packard company, to become a member of the Chicago Motor Car Company, which handles Packard cars in Chicago.

Previous to his departure for Germany, President Willy Tischbein of the Continental Caoutchouc Company was given a farewell dinner at the Hotel Astor. The dinner took place on Friday night, and on the following day Mr. Tischbein sailed for the other side. Those present included J. M. Gilbert, the new general manager of the company, and Emil Grossman, the retiring general manager; James Gibney, the Philadelphia representative, and Messrs. Knauth, Brooks, Eckhardt, Loomis, Lomal, Waldman, and Sheldon.

## INFORMATION FOR BUYERS.

**PURITAN GAS TANKS.**—The accompanying illustration shows the compressed acetylene gas tank manufactured by the Old Colony Light Company, of the Motor Mart, Boston, Mass., under the name of the Puritan gas tank. The tank is 6 inches in diameter and 24 inches long, and is made of seamless drawn steel tubing that will stand a pressure of 1,500 pounds to the square inch. A safety plug is fitted which



PURITAN TANK FOR COMPRESSED ACETYLENE GAS.

blows out at a pressure of 500 pounds to the square inch, so that the margin of safety is ample. The tank is designed to hold 50 cubic feet of gas. A handsome finish is produced by copper plating the exterior and then nickeling. One end of the tank is of hemispherical form and integral with the body, while the other end is brazed in and is sunk, the pressure gauge being carried in the depression so formed. The reducing valve for the line-pipe coupling is in the round end.

**DRAGON AUTO HORN.**—The days have long passed when anything with a good sharp squawk would answer for an automobile horn—in fact, the tone of a high-grade modern automobile horn is not unlike that of a brass band instrument. A large horn with a remarkably deep, resonant tone that can be heard for a great distance has been marketed by the Automobile Supply Manufacturing Company, of 320 Driggs avenue and 147 Emerson place, Brooklyn, under the appropriate name of the Dragon horn. The appearance of the horn is well shown in the accompanying engraving. This company also manufactures flexible tubing and high grade automobile lamps.



DEEP-TONED DRAGON HORN.

At the new quarters at 147 Emerson place nothing but horns will be manufactured; the old factory is running night and day, making flexible tubes and lamps.

**FOR COLD WEATHER.**—Automobiling in cold weather is all right as long as the automobilists can keep reasonably warm; and the problem of keeping out the icy

air currents that float round a car going at a fair speed is by no means a small one. It has been attacked, however, by the Davis Robe Company, of 1306 Champlain Building, Chicago, Ill., a concern that manufactures robes and similar articles in variety. The Davis "Robe of Comfort" is fashioned after the manner of a bag, inclosing the wearer and effectually preventing the entrance of cold air. The

robe is closely held about the waist and there is no other opening. For the man at the wheel, who must have the use of his feet but who has just as much distaste for benumbed extremities as the occupants of the rear seats, the Davis company manufactures a robe with a separate compartment for each

leg, called the "Arctic Overpants." These permit the wearer to move around either in or out of the car, and still keep his feet and legs dry and warm.

**HIGH GRADE JACK.**—With a view to supplying an automobile jack of the highest possible quality to those who want the best they can get, the Buckeye Jack Manu-



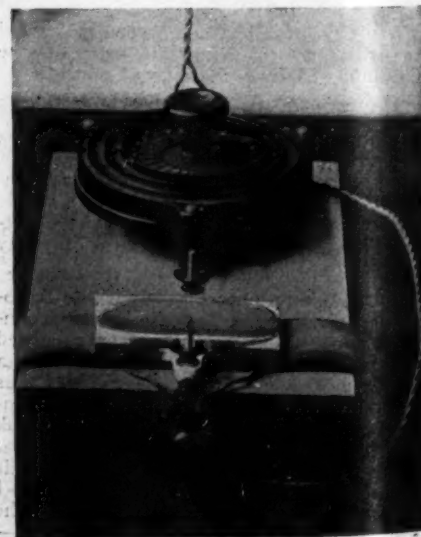
BUCKEYE AUTOMATIC JACK.

facturing Company, of Louisville, O., has placed on the market the jack illustrated herewith and known as No. 05. The jack is single acting and automatic, the load being lifted only on the downward stroke of the handle. For this reason it is possible to operate the jack with the foot while the hands are busy doing something else. The racks and pawls are made of high grade steel drop forgings and the construction generally is of the best grade.

**YANKEE SILENT MUFFLER.**—The manufacturers of the Yankee muffler, D. B. Smith & Company, of Utica, N. Y., state that the muffler is not only capable of eliminating all noise from the exhaust of the motor, but that it will eliminate all back pressure; and even more, that it actually produces a partial vacuum which has a marked effect in scavenging the cylinders after each exhaust stroke. The muffler is made with a series of saucer-shaped steel plates placed edge to edge, concave sides facing, and held by long double-nutted bolts. An outer shell surrounds the series of chambers thus formed. The exhaust gases are carried into the spaces between the concave plates and escape between the edges of the plates into the outer chamber and thence into the atmosphere. A separate expansion chamber is provided and the bases expand into this before reaching the muffler proper. Yankee mufflers are made in all sizes for automobile and marine motors. The manufacturers state that two

cycle motors are using this motor very successfully, owing to the lack of back pressure. This is an important point and should interest owners of motors of this type, which are usually very sensitive to back pressure and are therefore often insufficiently muffled. In motor boats used for fishing it is important to get the quietest possible action, and an efficient muffler is of the first importance.

**SMALL ELECTRIC VULCANIZER.**—The steady, even heat that can be generated by the use of the electric current has proved useful in many ways, and it seems only natural that it should now be adapted to the vulcanization of tire repairs. It is exceedingly annoying, to state the case mildly, though to have a patch applied on a hot day come off an hour or so afterward and necessitate a repetition of the exceedingly distasteful job, and for this reason a small portable outfit for making permanent tire repairs is a very desirable adjunct to the equipment of the car. Electric current can be obtained almost anywhere now, and the Shaler electric vulcanizer, manufactured by C. A. Shaler & Co., of Waupun, Wis., is furnished with a plug to fit the ordinary incandescent lamp socket. The Shaler vulcanizer has an electric heating coil which heats a metal casing. The casing is flat on one side and concave on the other, the flat side being used for vulcanizing inner tubes and the concave side for working on shoes. A wooden handle is fitted. When being used for inner tube patching the vulcanizer is clamped to a little ledge intended to be secured to the edge of a table and forming part of the vulcanizer outfit. When used on a shoe the vulcanizer may be secured direct to the tire without removing it from the wheel of the car, chains passing around the rim and holding the vulcanizer in position. A resistance coil with fifteen contact points makes it an easy matter to regulate the heat, while a thermometer shows the operator just what temperature has been reached. After the resistance has been set for a certain heat, that temperature will be maintained as long as the current supply is steady, so that the apparatus needs no watching and will not burn the tire. The capacity of the vulcanizer is a patch six inches long; by resetting the vulcanizer a repair of almost any length can be made. A special attachment is supplied to vulcanize valve stems to tubes. The Shaler vulcanizer is made to work with any desired voltage. When ordering, state voltage of current to be used.



SHALER ELECTRIC VULCANIZER AT WORK.